Interplay® | Engine
Failover Guide for AS3000 Servers

September 2014

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Using This Guide

Congratulations on the purchase of Interplay | Production, a powerful system for managing media in a shared storage environment.

This guide is intended for all Interplay Production administrators who are responsible for installing, configuring, and maintaining an Interplay | Engine with the Automatic Server Failover module integrated. This guide is for Interplay Engine clusters that use Avid AS3000 servers.

Revision History

Date Revised	Changes Made
October 9, 2014	Added note to use 8Gb/sec data rate for connection to HP MSA 2400. See "Changing Default Settings for the ATTO Card on Each Node" on page 36.
September 2014	• Added information for HP MSA 2400 storage array. See "Server Failover Requirements" on page 18, • Added procedure for removing the Application Server role. See "Removing the Application Server Role from Each Node" on page 38. • Added procedure for allowing IPv6 in a local firewall. See "Configuring Local Software Firewalls" on page 39. • Added instructions for re-enabling IPv6. See "Enabling TCP/IPv6 in the Registry" on page 128.
April 2013	Added note that roaming profiles are not supported. See "Requirements for Domain User Accounts" on page 29.
May 2013	Revisions to remove support for Infortrend A16F-R2431with the new ATTO FC-81EN card, and to describe login to the ATTO Configuration Tool ("Changing Default Settings for the ATTO Card on Each Node" on page 36.)
February 2013	Revisions to describe Rev. 4 image (including new appendix "Windows Server Settings Included in Revision 4 and Later Images" on page 116).
November 2012	Moved information on preparing server from "Preparing the Server for the Cluster Service" on page 35 to "Windows Server Settings Included in Revision 4 and Later Images" on page 116.

Date Revised	Changes Made
January 10, 2012	Corrected step 1 in "Starting the Installation and Accepting the License Agreement" on page 78 and added cross-reference in "Testing the Complete Installation" on page 108.
January 6, 2012	Revised "Testing the Cluster Installation" on page 71 for additional enhancements.
December 12, 2011	Revised "Testing the Cluster Installation" on page 71 to describe command line method.
November 7, 2011	Revisions include the following: • "Requirements for Domain User Accounts" on page 29. Expanded description and use of cluster installation account. • "Testing the Cluster Installation" on page 71: Corrected to show both networks online.

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Symbol or Convention	Meaning or Action
	A note provides important related information, reminders, recommendations, and strong suggestions.
	A caution means that a specific action you take could cause harm to your computer or cause you to lose data.
	A warning describes an action that could cause you physical harm. Follow the guidelines in this document or on the unit itself when handling electrical equipment.
>	This symbol indicates menu commands (and subcommands) in the order you select them. For example, File > Import means to open the File menu and then select the Import command.
‣	This symbol indicates a single-step procedure. Multiple arrows in a list indicate that you perform one of the actions listed.
(Windows), (Windows only), (Macintosh), or (Macintosh only)	This text indicates that the information applies only to the specified operating system, either Windows or Macintosh OS X.
Bold font	Bold font is primarily used in task instructions to identify user interface items and keyboard sequences.

Symbol or Convention	Meaning or Action
Italic font	Italic font is used to emphasize certain words and to indicate variables.
`Courier Bold font`	Courier Bold font identifies text that you type.
Ctrl+key or mouse action	Press and hold the first key while you press the last key or perform the mouse action. For example, Command+Option+C or Ctrl+drag.
| (pipe character)	The pipe character is used in some Avid product names, such as Interplay | Production. In this document, the pipe is used in product names when they are in headings or at their first use in text.

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You can access the Interplay Production User Information Center through a browser from any system in the Interplay Production environment. You can also access it through the Help menu in Interplay | Access and the Interplay | Administrator.

The Interplay Production Help combines information from all Interplay Production guides in one Help system. It includes a combined index and a full-featured search. From the Interplay Production Portal, you can run the Help in a browser or download a compiled (.chm) version for use on other systems, such as a laptop.

To open the Interplay Production User Information Center through a browser:

1. Type the following line in a Web browser:

   `http://Interplay_Production_Engine_name`

   For *Interplay_Production_Engine_name* substitute the name of the computer running the Interplay Production Engine software. For example, the following line opens the portal Web page on a system named docwg:

   `http://docwg`

2. Click the "Interplay Production User Information Center" link to access the Interplay Production User Information Center Web page.

To open the Interplay Production User Information Center from Interplay Access or the Interplay Administrator:

- Select Help > Documentation Website on Server.

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1 Automatic Server Failover Introduction

This chapter covers the following topics:

- Server Failover Overview
- How Server Failover Works
- Installing the Failover Hardware Components
- Clustering Technology and Terminology

Server Failover Overview

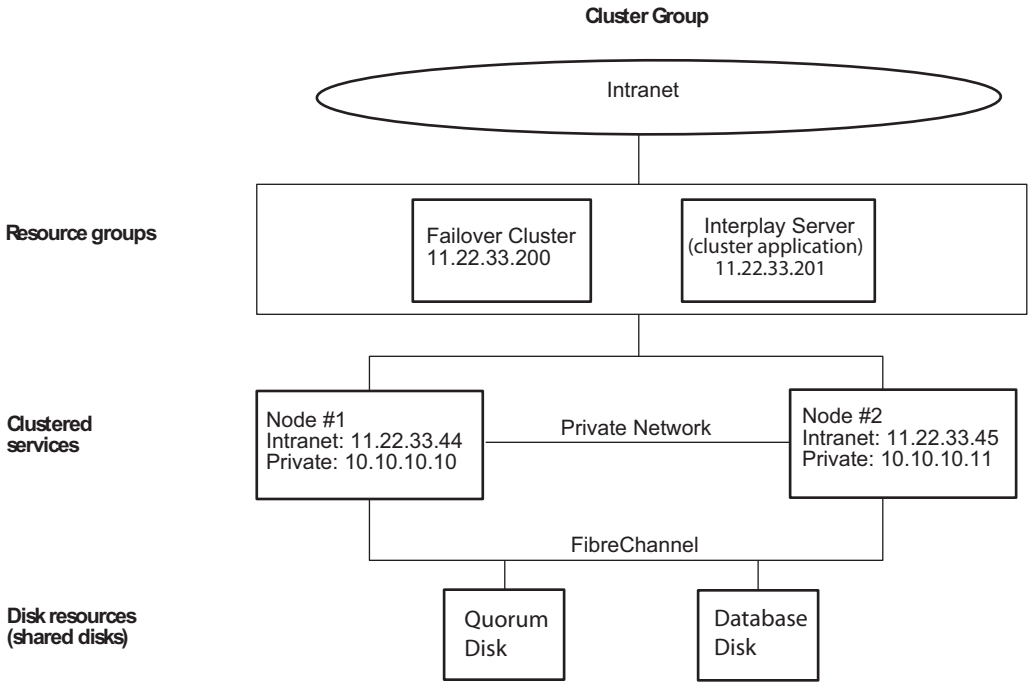
The automatic server failover mechanism in Avid Interplay allows client access to the Interplay Engine in the event of failures or during maintenance, with minimal impact on the availability. A failover server is activated in the event of application, operating system, or hardware failures. The server can be configured to notify the administrator about such failures using email.

The Interplay implementation of server failover uses Microsoft® clustering technology. For background information on clustering technology and links to Microsoft clustering information, see "Clustering Technology and Terminology" on page 27.

Additional monitoring of the hardware and software components of a high-availability solution is always required. Avid delivers Interplay preconfigured, but additional attention on the customer side is required to prevent outage (for example, when a private network fails, RAID disk fails, or a power supply loses power). In a mission critical environment, monitoring tools and tasks are needed to be sure there are no silent outages. If another (unmonitored) component fails, only an event is generated, and while this does not interrupt availability, it might go unnoticed and lead to problems. Additional software reporting such issues to the IT administration lowers downtime risk.

The failover cluster is a system made up of two server nodes and a shared-storage device connected over Fibre Channel. These are to be deployed in the same location given the shared access to the storage device. The cluster uses the concept of a "virtual server" to specify groups of resources that failover together. This virtual server is referred to as a "cluster application" in the failover cluster user interface.

The following diagram illustrates the components of a cluster group, including sample IP addresses. For a list of required IP addresses and node names, see "List of IP Addresses and Network Names" on page 31.



If you are already using clusters, the Avid Interplay Engine will not interfere with your current setup.

How Server Failover Works

Server failover works on two different levels:

- Failover in case of hardware failure
- Failover in case of network failure

Hardware Failover Process

When the Microsoft cluster service is running on both systems and the server is deployed in cluster mode, the Interplay Engine and its accompanying services are exposed to users as a virtual server (or cluster application). To clients, connecting to the clustered virtual Interplay Engine appears to be the same process as connecting to a single, physical machine. The user or client application does not know which node is actually hosting the virtual server.

When the server is online, the resource monitor regularly checks its availability and automatically restarts the server or initiates a failover to the other node if a failure is detected. The exact behavior can be configured using the Failover Cluster Manager. Because clients connect to the virtual network name and IP address, which are also taken over by the failover node, the impact on the availability of the server is minimal.

Network Failover Process

Avid supports a configuration that uses connections to two public networks (VLAN 10 and VLAN 20) on a single switch. The cluster monitors both networks. If one fails, the cluster application stays on line and can still be reached over the other network. If the switch fails, both networks monitored by the cluster will fail simultaneously and the cluster application will go offline.

For a high degree of protection against network outages, Avid supports a configuration that uses two network switches, each connected to a shared primary network (VLAN 30) and protected by a failover protocol. If one network switch fails, the virtual server remains online through the other VLAN 30 network and switch.

These configurations are described in the next section.

Changes for Windows Server 2008

This document describes a cluster configuration that uses the cluster application supplied with Windows Server 2008 R2 Enterprise. The cluster creation process is simpler than that used for Windows Server 2003, and eliminates the need to rely on a primary network. Requirements for the Microsoft cluster installation account have changed (see “Requirements for Domain User Accounts” on page 29). Requirements for DNS entries have also changed (see “Active Directory and DNS Requirements” on page 34).

Installation of the Interplay Engine and Interplay Archive Engine now supports Windows Server 2008, but otherwise has not changed.

Server Failover Configurations

There are two supported configurations for integrating a failover cluster into an existing network:

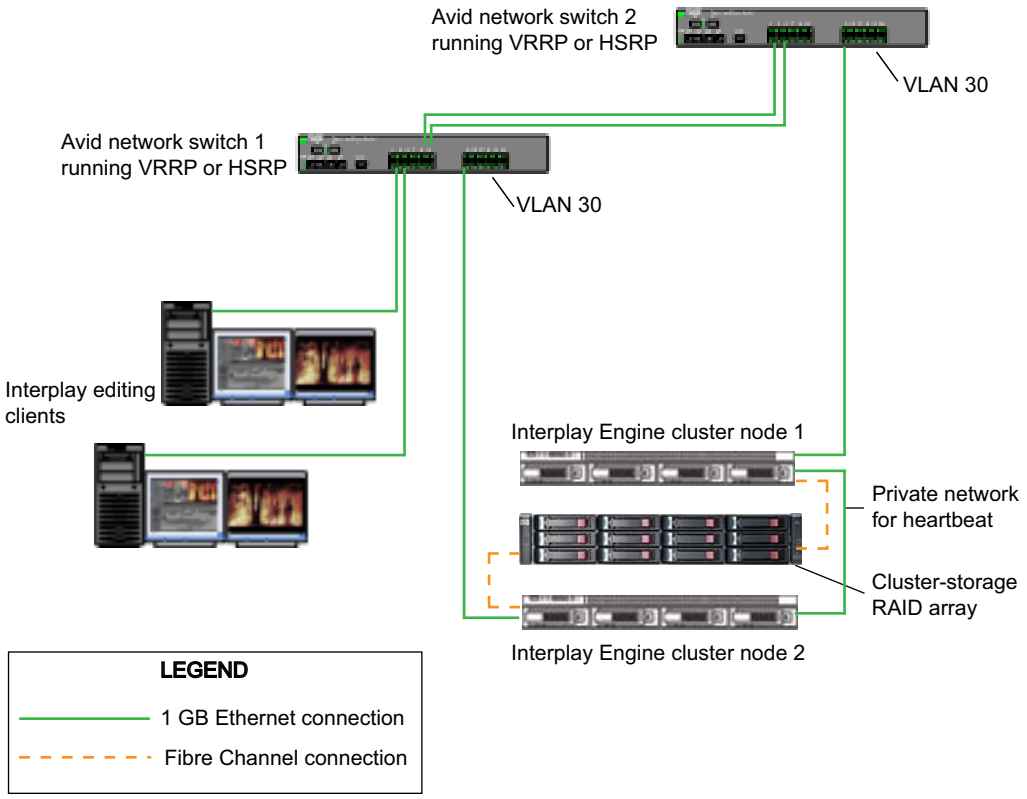
- A cluster in an Avid ISIS environment that is integrated into the intranet through two layer-3 switches (VLAN 30 in Zone 3). This “redundant-switch” configuration protects against both hardware and network outages and thus provides a higher level of protection than the dual-connected configuration.
- A cluster in an Avid ISIS environment that is integrated into the intranet through two public networks (VLAN 10 and VLAN 20 in Zone 1). This “dual-connected” configuration protects against hardware outages and network outages. If one network fails, the cluster application stays on line and can be reached over the other network.

Redundant-Switch Configuration

The following diagram illustrates the failover cluster architecture for an Avid ISIS environment that uses two layer-3 switches. These switches are configured for failover protection through either HSRP (Hot Standby Router Protocol) or VRRP (Virtual Router Redundancy Protocol). The cluster nodes are connected to two subnets (VLAN 30), each on a different switch. If one of the VLAN 30 networks fails, the virtual server remains online through the other VLAN 30 network and switch.

This guide does not describe how to configure redundant switches for an Avid ISIS media network. Configuration information is included in the ISIS Qualified Switch Reference Guide*, which is available for download from the Avid Customer Support Knowledge Base at www.avid.com\onlinesupport.*

Two-Node Cluster in an Avid ISIS Environment (Redundant-Switch Configuration)



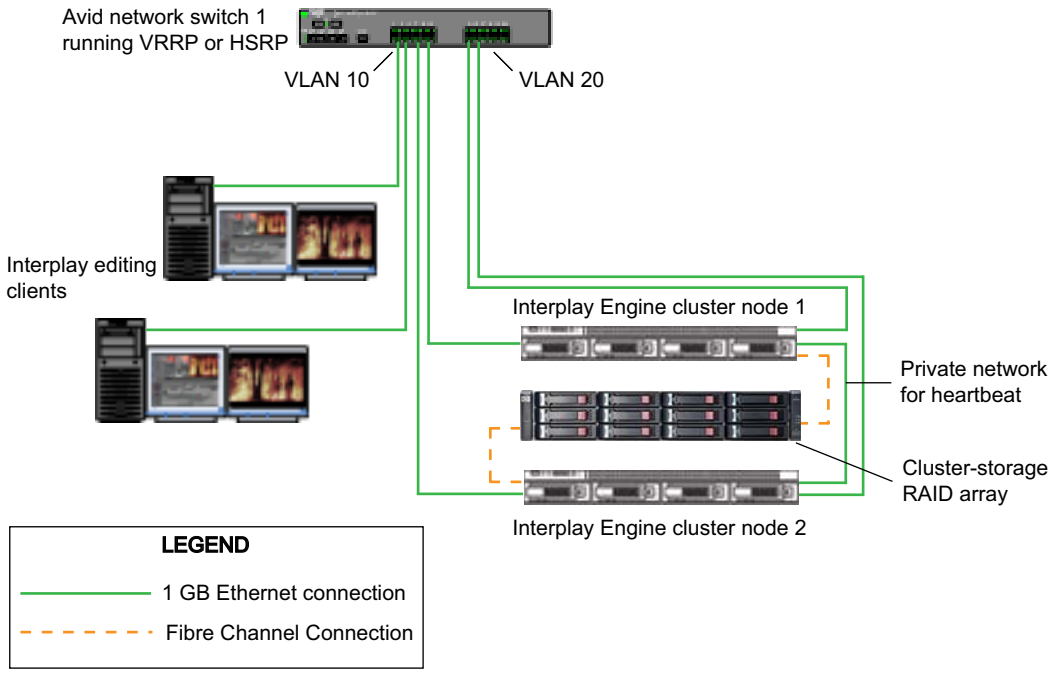
The following table describes what happens in the redundant-switch configuration as a result of an outage:

Type of Outage	Result
Hardware (CPU, network adapter, memory, cable, power supply) fails	The cluster detects the outage and triggers failover to the remaining node. The Interplay Engine is still accessible.
Network switch 1 (VLAN 30) fails	External switches running VRRP/HSRP detect the outage and make the gateway available as needed. The Interplay Engine is still accessible.
Network switch 2 (VLAN 30) fails	External switches running VRRP/HSRP detect the outage and make the gateway available as needed. The Interplay Engine is still accessible.

Dual-Connected Configuration

The following diagram illustrates the failover cluster architecture for an Avid ISIS environment. In this environment, each cluster node is “dual-connected” to the network switch: one network interface is connected to the VLAN 10 subnet and the other is connected to the VLAN 20 subnet. If one of the subnets fails, the virtual server remains online through the other subnet.

Two-Node Cluster in an Avid ISIS Environment (Dual-Connected Configuration)



The following table describes what happens in the dual-connected configuration as a result of an outage:

Type of Outage	Result
Hardware (CPU, network adapter, memory, cable, power supply) fails	The cluster detects the outage and triggers failover to the remaining node. The Interplay Engine is still accessible.
Left ISIS VLAN (VLAN10) fails	The Interplay Engine is still accessible through the right network.
Right ISIS VLAN (VLAN 20) fails	The Interplay Engine is still accessible through the left network.

Server Failover Requirements

You should make sure the server failover system meets the following requirements.

Hardware

The automatic server failover system was qualified with the following hardware:

- Two Avid AS3000 servers functioning as nodes in a failover cluster. For installation information, see the *Avid AS3000 Setup Guide.*
- Two ATTO Celerity FC-81EN Fibre Channel host adapters (one for each server in the cluster), installed in the top PCIe slot.
- One of the following
  - One Infortrend® S12F-R1440 storage array. For more information, see the *Infortrend EonStor®DS S12F-R1440 Installation and Hardware Reference Manual.*
  - One HP® MSA 2040 storage array. For more information, see the *HP MSA 2040 User Guide* and other HP MSA documentation.

The Infortrend A16F-R2431 (Gen 2) is not supported for use with the FC-81EN host adapter.

The servers in a cluster are connected using one or more cluster shared-storage buses and one or more physically independent networks acting as a heartbeat.

Server Software

The automatic failover system was qualified on the following operating system:

- Windows Server 2008 R2 Enterprise

A license for the Interplay Engine failover cluster is required. A license for a failover cluster includes two hardware IDs. For installation information, see “Installing a Permanent License” on page 109.

Space Requirements

The default disk configuration for the Infortrend shared RAID array is as follows:

Disk	Infortrend S12F-R1440
Disk 1 Quorum disk	10 GB
Disk 2 (not used)	10 GB

Disk	Infortrend S12F-R1440
Disk 3 Database disk	814 GB or larger

Disk	HP MSA 2040
Disk 1 Quorum disk	10 GB
Disk 2 Database disk	870 GB or larger

Antivirus Software

You can run antivirus software on a cluster, if the antivirus software is cluster-aware. For information about cluster-aware versions of your antivirus software, contact the antivirus vendor. If you are running antivirus software on a cluster, make sure you exclude these locations from the virus scanning: Q:\ (Quorum disk), C:\Windows\Cluster, and S:\Workgroup_Databases (database).

See also "Configuring Local Software Firewalls" on page 39.

Functions You Need To Know

Before you set up a cluster in an Avid Interplay environment, you should be familiar with the following functions:

- Microsoft Windows Active Directory domains and domain users
- Microsoft Windows clustering for Windows Server 2008 (see "Clustering Technology and Terminology" on page 27)
- Disk configuration (format, partition, naming)
- Network configuration

  For information about Avid Networks and Interplay Production, search for document 244197 "Network Requirements for ISIS and Interplay Production" on the Customer Support Knowledge Base at www.avid.com/onlinesupport.

Installing the Failover Hardware Components

A failover cluster system includes the following components:

- Two Interplay Engine nodes or two Interplay Archive nodes (two AS3000 servers)
- One of the following shared-storage RAID arrays:
  - Infortrend S12F-R1440
  - HP MSA 2040

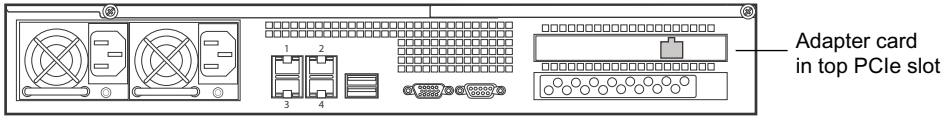
The following topics provide information about installing the failover hardware components for the supported configurations:

- "AS3000 Slot Locations" on page 20
- "Failover Cluster Connections: Avid ISIS, Redundant-Switch Configuration" on page 21
- "Failover Cluster Connections, Dual-Connected Configuration" on page 24

AS3000 Slot Locations

Each AS3000 server requires a ATTO Celerity FC-81EN Fibre Channel host adapter to connect to the shared-storage RAID array. The card should be installed in the top expansion slot, as shown in the following illustration.

Avid AS3000 (Rear View)



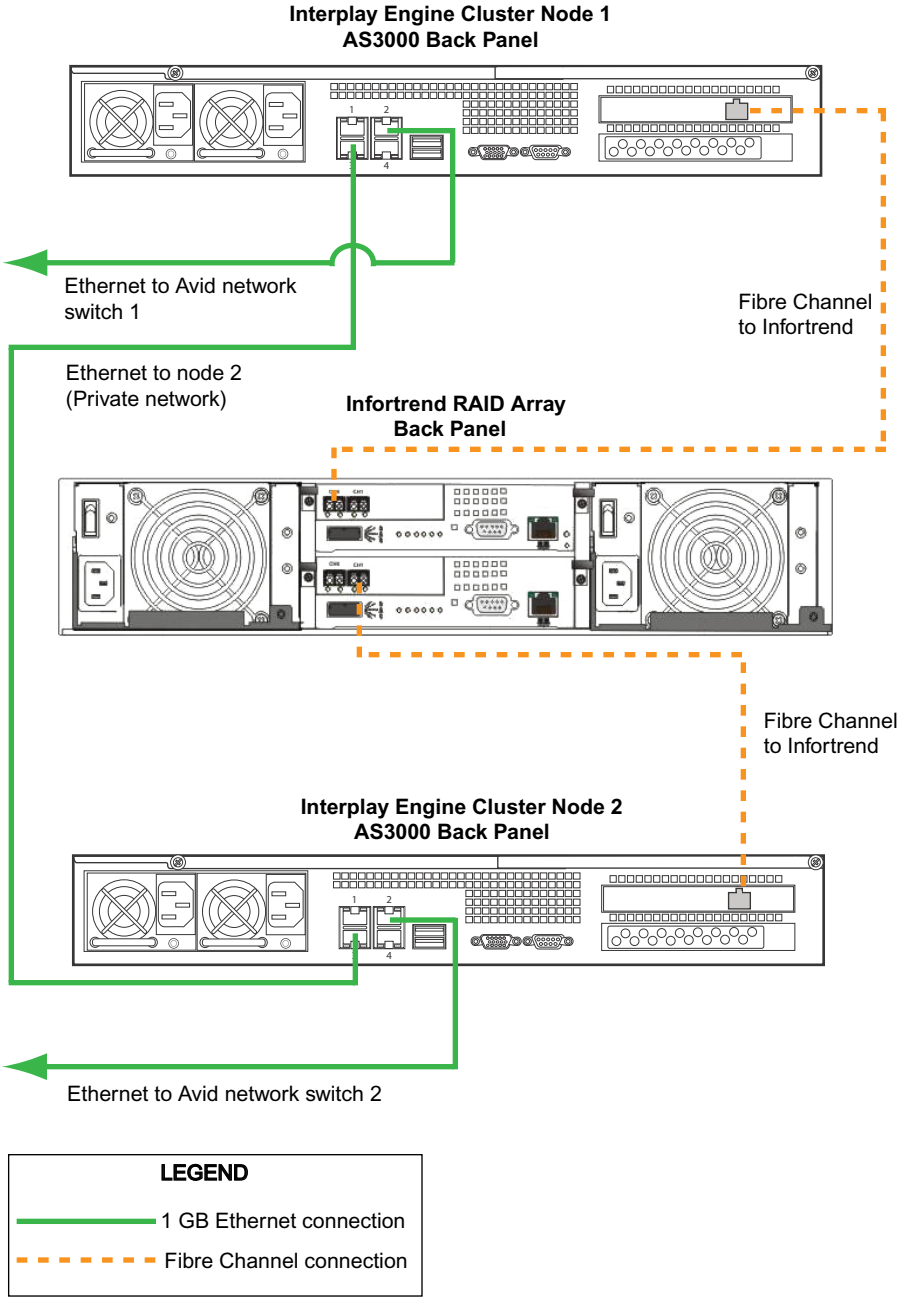
Failover Cluster Connections: Avid ISIS, Redundant-Switch Configuration

Make the following cable connections to add a failover cluster to an Avid ISIS environment, using the redundant-switch configuration:

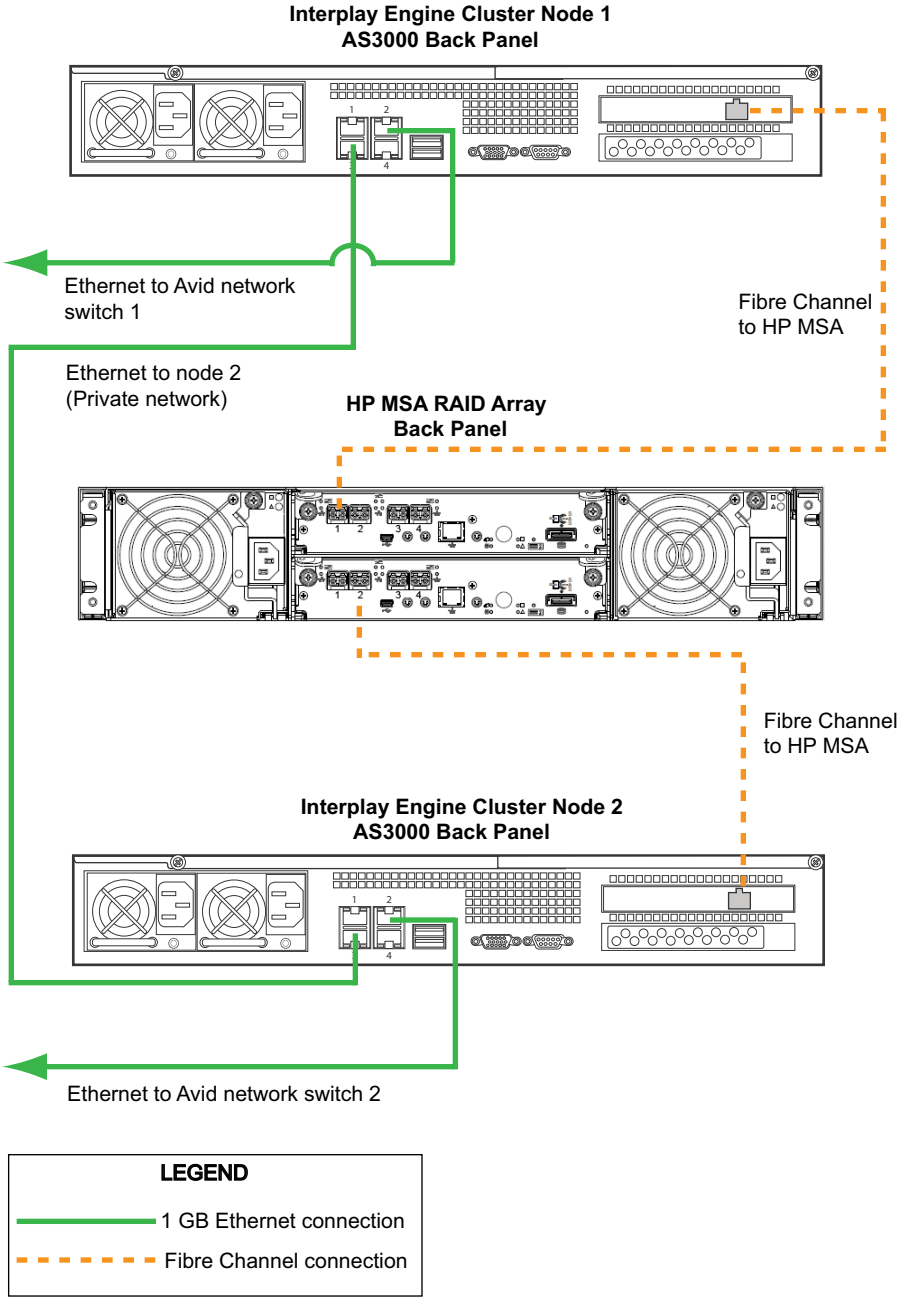
- First cluster node:
  - Top-right network interface connector (2) to layer-3 switch 1 (VLAN 30)
  - Bottom-left network interface connector (3) to the bottom-left network interface connector on the second cluster node (private network for heartbeat)
  - Fibre Channel connector on the ATTO Celerity FC-81EN card to Fibre Channel connector Port 1 (top left) on the Infortrend RAID array or the HP MSA RAID array.
- Second cluster node:
  - Top-right network interface connector (2) to layer-3 switch 2 (VLAN 30)
  - Bottom-left network interface connector (3) to the bottom-left network interface connector on the second cluster node (private network for heartbeat)
  - Fibre Channel connector on the ATTO Celerity FC-81EN card to the Fibre Channel connector Port 2 (bottom, second from left) on the Infortrend RAID array or the HP MSA RAID array.

The following illustrations show these connections.

Failover Cluster Connections: Avid ISIS, Redundant-Switch Configuration, Infortrend



Failover Cluster Connections: Avid ISIS, Redundant-Switch Configuration, HP MSA


Interplay Engine Cluster Node 1
AS3000 Back Panel
Ethernet to Avid network switch 1
Fibre Channel to HP MSA
Ethernet to node 2 (Private network)
HP MSA RAID Array
Back Panel
Fibre Channel to HP MSA
Interplay Engine Cluster Node 2
AS3000 Back Panel
Ethernet to Avid network switch 2
LEGEND
1 GB Ethernet connection
Fibre Channel connection

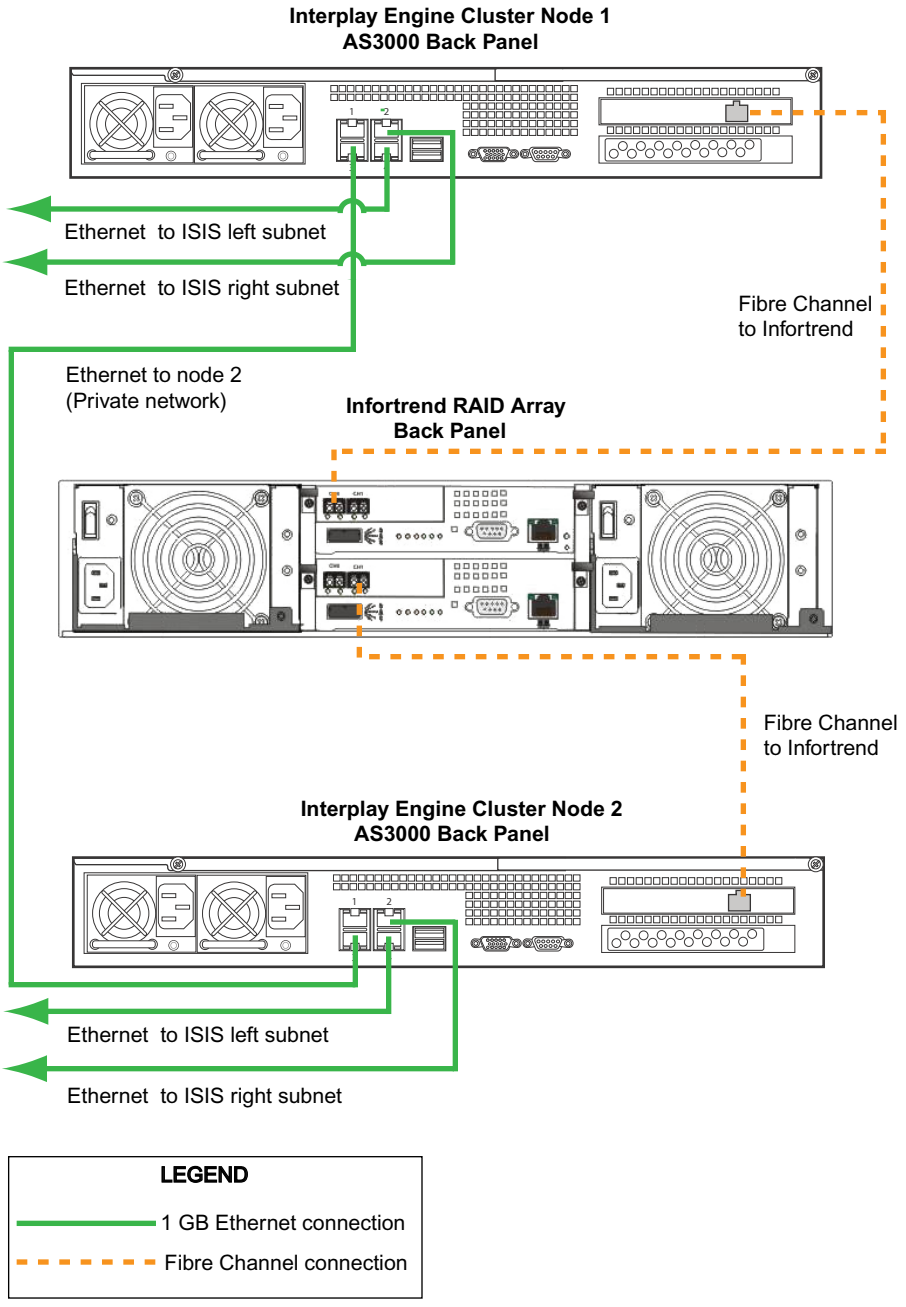
Failover Cluster Connections, Dual-Connected Configuration

Make the following cable connections to add a failover cluster to an Avid ISIS environment as a dual-connected configuration:

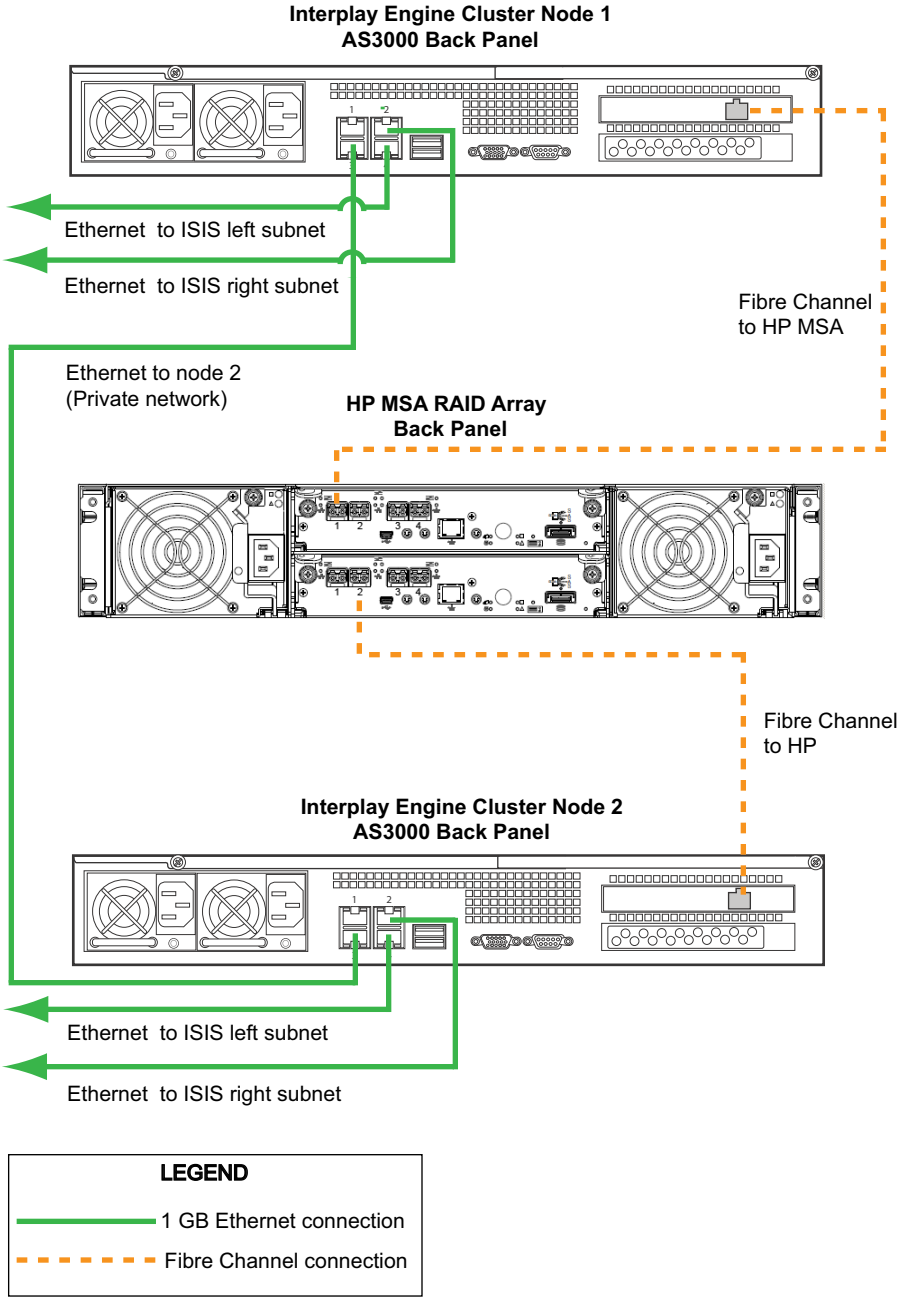
- First cluster node (AS3000):
  - Top-right network interface connector (2) to the ISIS left subnet (VLAN 10 public network)
  - Bottom-right network interface connector (4) to the ISIS right subnet (VLAN 20 public network)
  - Bottom-left network interface connector (3) to the bottom-left network interface connector on the second cluster node (private network for heartbeat)
  - Fibre Channel connector on the ATTO Celerity FC-81EN card to Fibre Channel connector Port 1 (top left) on the Infortrend RAID array or the HP MSA RAID array.
- Second cluster node (AS3000):
  - Top-right network interface connector (2) to the ISIS left subnet (VLAN 10 public network)
  - Bottom-right network interface connector (4) to the ISIS right subnet (VLAN 20 public network)
  - Bottom-left network interface connector (3) to the bottom-left network interface connector on the first cluster node (private network for heartbeat)
  - Fibre Channel connector on the ATTO Celerity FC-81EN card to Fibre Channel connector Port 2 (bottom, second from left) on the Infortrend RAID array or the HP MSA RAID array.

The following illustrations show these connections.

Failover Cluster Connections, Avid ISIS, Dual-Connected Configuration, Infortrend



Failover Cluster Connections, Avid ISIS, Dual-Connected Configuration, HP MSA



Clustering Technology and Terminology

Clustering is not always straightforward, so it is important that you get familiar with the technology and terminology of failover clusters before you start. A good source of information is the Windows Server 2008 R2 Failover Clustering resource site: www.microsoft.com/windowsserver2008/en/us/failover-clustering-technical.aspx

The following link describes the role of the quorum in a cluster: http://technet.microsoft.com/en-us/library/cc770620(WS.10).aspx

Here is a brief summary of the major concepts and terms:

- *Nodes:* Individual computers in a cluster configuration.
- *Cluster service*: A Windows service that provides the cluster functionality. When this service is stopped, the node appears offline to other cluster nodes.
- *Resource:* Cluster components (hardware and software) that are managed by the cluster service. Resources are physical hardware devices such as disk drives, and logical items such as IP addresses and applications.
- *Online resource:* A resource that is available and is providing its service.
- *Quorum*: A special common cluster resource. This resource plays a critical role in cluster operations.
- *Resource group*: A collection of resources that are managed by the cluster service as a single, logical unit and that are always brought online on the same node.

2 Creating a Microsoft Failover Cluster

This chapter describes the processes for creating a Microsoft failover cluster for automatic server failover. It is crucial that you follow the instructions given in this chapter completely, otherwise the automatic server failover will not work.

This chapter covers the following topics:

- Server Failover Installation Overview
- Before You Begin the Server Failover Installation
- Preparing the Server for the Cluster Service
- Configuring the Cluster Service

Instructions for installing the Interplay Engine are provided in "Installing the Interplay | Engine for a Failover Cluster" on page 74.

Server Failover Installation Overview

Installation and configuration of the automatic server failover consists of the following major tasks:

- Make sure that the network is correctly set up and that you have reserved IP host names and IP addresses (see "Before You Begin the Server Failover Installation" on page 29).
- Prepare the servers for the cluster service (see "Preparing the Server for the Cluster Service" on page 35). This includes configuring the nodes for the network and formatting the drives.
- Configure the cluster service (see "Configuring the Cluster Service" on page 52).
- Install the Interplay Engine on both nodes (see "Installing the Interplay | Engine for a Failover Cluster" on page 74).
- Test the complete installation (see "Testing the Complete Installation" on page 108).

Do not install any other software on the cluster machines except the Interplay Engine. For example, Media Indexer software needs to be installed on a different server. For complete installation instructions, see the Interplay | Production Software Installation and Configuration Guide.

For more details about Microsoft clustering technology, see the Windows Server 2008 R2 Failover Clustering resource site:
www.microsoft.com/windowsserver2008/en/us/failover-clustering-technical.aspx

Before You Begin the Server Failover Installation

Before you begin the installation process, you need to do the following:

- Make sure all cluster hardware connections are correct. See "Installing the Failover Hardware Components" on page 20.
- Make sure that the site has a network that is qualified to run Active Directory and DNS services.
- Make sure the network includes an Active Directory domain before you install or configure the cluster.
- Determine the subnet mask, the gateway, DNS, and WINS server addresses on the network.
- Reserve static IP addresses for all network interfaces and host names. See "List of IP Addresses and Network Names" on page 31.
- Make sure the time settings for both nodes are in sync. If not, you must synchronize the times or you will not be able to add both nodes to the cluster.
- Make sure the Remote Registry service is started and is enabled for Automatic startup. Open Server Management and select Configuration > Services > Remote Registry.
- Create or select domain user accounts for creating and administering the cluster. See "Requirements for Domain User Accounts" on page 29.
- Create an Avid shared-storage user account with read and write privileges. This account is not needed for the installation of the Interplay Engine, but is required for the operation of the Interplay Engine (for example, media deletion from shared-storage). The user name and password must exactly match the user name and password of the Server Execution User.
- Be prepared to install and set up an Avid shared-storage client on both servers after the failover cluster configuration and Interplay Engine installation is complete. See the *Avid ISIS System Setup Guide*.

Requirements for Domain User Accounts

Before beginning the cluster installation process, you need to select or create the following user accounts in the domain that includes the cluster:

- **Server Execution User:** Create or select an account that is used by the Interplay Engine services (listed as the Avid Workgroup Engine Monitor and the Avid Workgroup TCP COM Bridge in the list of Windows services). This account must be a domain user and it must be a unique name that will not be used for any other purpose. The procedures in this document

use *sqauser* as an example of a Server Execution User. This account is automatically added to the Local Administrators group on each node by the Interplay Engine software during the installation process.

The Server Execution User is not used to start the cluster service for a Windows Server 2008 installation. Windows Server 2008 uses the system account to start the cluster service. The Server Execution User is used to start the Avid Workgroup Engine Monitor and the Avid Workgroup TCP COM Bridge.

The Server Execution User is critical to the operation of the Interplay Engine. If necessary, you can change the name of the Server Execution User after the installation. For more information, see "Troubleshooting the Server Execution User Account" and "Re-creating the Server Execution User" in the *Interplay | Engine and Interplay | Archive Engine Administration Guide* and the Interplay Help.

- **Cluster installation account:** Create or select a domain user account to use during the installation and configuration process. There are special requirements for the account that you use for the Microsoft cluster installation and creation process (described below).
  - If your site allows you to use an account with the required privileges, you can use this account throughout the entire installation and configuration process.
  - If your site does not allow you to use an account with the required privileges, you can work with the site's IT department to use a domain administrator's account only for the Microsoft cluster creation steps. For other tasks, you can use a domain user account without the required privileges.

  In addition, the account must have administrative permissions on the servers that will become cluster nodes. You can do this by adding the account to the local Administrators group on each of the servers that will become cluster nodes.

  Requirements for Microsoft cluster creation: To create a user with the necessary rights for Microsoft cluster creation, you need to work with the site's IT department to access Active Directory (AD). Depending on the account policies of the site, you can grant the necessary rights for this user in one of the following ways:
  - Make the user a member of the Domain Administrators group. There are fewer manual steps required when using this type of account.
  - Grant the user the permissions "Create Computer objects" and "Read All Properties" in the container in which new computer objects get created, such as the computer's Organizational Unit (OU).
  - Create computer objects for the cluster service (virtual host name) and the Interplay Engine service (virtual host name) in the Active Directory (AD) and grant the user Full Control on them. For examples, see "List of IP Addresses and Network Names" on page 31.

The account for these objects must be disabled so that when the Create Cluster wizard and the Interplay Engine installer are run, they can confirm that the account to be used for the cluster is not currently in use by an existing computer or cluster in the domain. The cluster creation process then enables the entry in the AD.

For more information on the cluster creation account and setting permissions, see the Microsoft article "Failover Cluster Step-by-Step Guide: Configuring Accounts in Active Directory" at http://technet.microsoft.com/en-us/library/cc731002%28WS.10%29.aspx

Roaming profiles are not supported in an Interplay Production environment.

- **Cluster administration account:** Create or select a user account for logging in to and administering the failover cluster server. Depending on the account policies of your site, this account could be the same as the cluster installation account, or it can be a different domain user account with administrative permissions on the servers that will become cluster nodes.

Do not use the same username and password for the Server Execution User and the cluster installation and cluster administration accounts. These accounts have different functions and require different privileges.

List of IP Addresses and Network Names

You need to reserve IP host names and static IP addresses on the in-network DNS server before you begin the installation process. The number of IP addresses you need depends on your configuration:

- An Avid ISIS environment with a redundant-switch configuration requires 4 public IP addresses and 2 private IP addresses
- An Avid ISIS environment with a dual-connected configuration requires 8 public IP addresses and 2 private IP addresses

Make sure that these IP addresses are outside of the range that is available to DHCP so they cannot automatically be assigned to other machines.

If your Active Directory domain or DNS includes more than one cluster, to avoid conflicts, you need to make sure the cluster names, MSDTC names, and IP addresses are different for each cluster.

All names must be valid and unique network host names.

The following table provides a list of example names that you can use when configuring the cluster for an ISIS redundant-switch configuration. You can fill in the blanks with your choices to use as a reference during the configuration process.

IP Addresses and Node Names: ISIS Redundant-Switch Configuration

Node or Service	Item Required	Example Name	Where Used
Cluster node 1	• 1 Host Name _____ • 1 ISIS IP address - public _____ • 1 IP address - private (Heartbeat) _____	SECLUSTER1	See "Creating the Cluster Service" on page 55.
Cluster node 2	• 1 Host Name _____ • 1 ISIS IP address - public _____ • 1 IP address - private (Heartbeat) _____	SECLUSTER2	See "Creating the Cluster Service" on page 55.
Microsoft cluster service	• 1 Network Name (virtual host name) _____ • 1 ISIS IP address - public (virtual IP address) _____	SECLUSTER	See "Creating the Cluster Service" on page 55.
Interplay Engine service	• 1 Network Name (virtual host name) _____ • 1 ISIS IP address - public (virtual IP address) _____	SEENGINE	See "Specifying the Interplay Engine Details" on page 80 and "Specifying the Interplay Engine Service Name" on page 82.

The following table provides a list of example names that you can use when configuring the cluster for an ISIS dual-connected configuration. Fill in the blanks to use as a reference.

IP Addresses and Node Names: ISIS Dual-Connected Configuration

Node or Service	Item Required	Example Name	Where Used
Cluster node 1	• 1 Host Name _____ • 2 ISIS IP addresses - public (left) _____ (right) _____ • 1 IP address - private (Heartbeat) _____	SECLUSTER1	See "Creating the Cluster Service" on page 55.
Cluster node 2	• 1 Host Name _____ • 2 ISIS IP addresses - public (left)_____ (right)_____ • 1 IP address - private (Heartbeat) _____	SECLUSTER2	See "Creating the Cluster Service" on page 55.
Microsoft cluster service	• 1 Network Name (virtual host name) _____ • 2 ISIS IP addresses - public (virtual IP addresses) (left) _____ (right)_____	SECLUSTER	See "Creating the Cluster Service" on page 55.

IP Addresses and Node Names: ISIS Dual-Connected Configuration (Continued)

Node or Service	Item Required	Example Name	Where Used
Interplay Engine service	• 1 Network Name (virtual host name) _____ • 2 ISIS IP addresses - public (virtual IP addresses) (left) _____ (right) _____	SEENGINE	See "Specifying the Interplay Engine Details" on page 80 and "Specifying the Interplay Engine Service Name" on page 82.

Active Directory and DNS Requirements

Use the following table to help you add Active Directory accounts for the cluster components to your site's DNS. If you are familiar with installing a Windows Server 2003 cluster, use the second table as a reference.

Windows Server 2008: DNS Entries

Component	Computer Account in Active Directory	DNS Dynamic Entry[a]	DNS Static Entry
Cluster node 1	*node_1_name*	Yes	No
Cluster node 2	*node_2_name*	Yes	No
MSDTC	Not used	Not used	Not used
Microsoft cluster service	*cluster_name*[b]	Yes	Yes[c]
Interplay Engine service (virtual)	*ie_name*[b]	Yes	Yes[c]

a. Entries are dynamically added to the DNS when the node logs on to Active Directory.
b. If you manually created Active Directory entries for the Microsoft cluster service and Interplay Engine service, make sure to disable the entries in Active Directory in order to build the Microsoft cluster (see "Requirements for Domain User Accounts" on page 29).
c. Add reverse static entries only. Forward entries are dynamically added by the failover cluster. Static entries must be exempted from scavenging rules.

Windows Server 2003: DNS Entries

Component	Computer Account in Active Directory	DNS Dynamic Entry[a]	DNS Static Entry[b]
Cluster node 1	*node_1_name*	Yes	No
Cluster node 2	*node_2_name*	Yes	No
MSDTC	No	No	Yes
Microsoft cluster service	No	No	Yes
Interplay Engine service (virtual)	No	No	Yes

a. Entries are dynamically added to the DNS when the node logs on to Active Directory.
b. Entries must be manually added to the DNS and must be exempted from scavenging rules.

Preparing the Server for the Cluster Service

Before you configure the cluster service, you need to complete the tasks in the following procedures:

- “Changing Default Settings for the ATTO Card on Each Node” on page 36
- “Changing Windows Server Settings on Each Node” on page 38
- “Removing the Application Server Role from Each Node” on page 38
- “Renaming the Local Area Network Interface on Each Node” on page 39
- “Configuring the Private Network Adapter on Each Node” on page 42
- “Configuring the Binding Order Networks on Each Node” on page 46
- “Configuring the Public Network Adapter on Each Node” on page 47
- “Configuring the Cluster Shared-Storage RAID Disks on Each Node” on page 48

The tasks in this section do not require the administrative privileges needed for Microsoft cluster creation (see “Requirements for Domain User Accounts” on page 29).

Changing Default Settings for the ATTO Card on Each Node

You need to use the ATTO Configuration Tool to change some default settings on each node in the cluster.

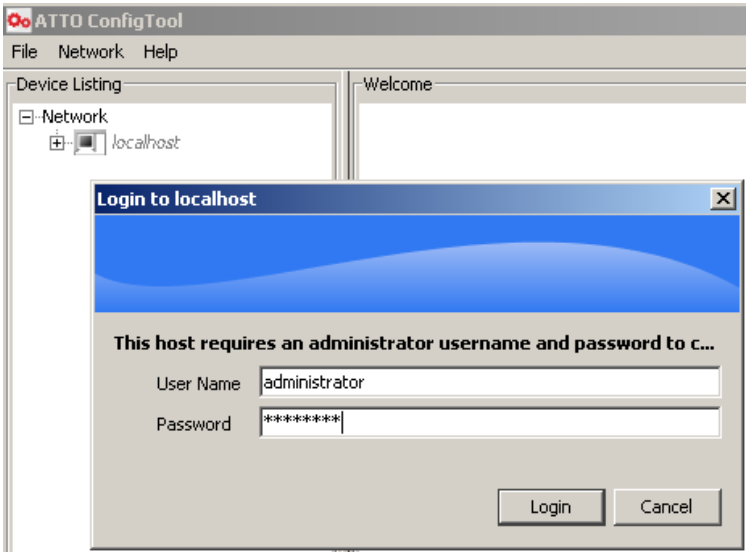
To change the default settings for the ATTO card:

1. On the first node, click Start, and select Programs > ATTO ConfigTool > ATTO ConfigTool.

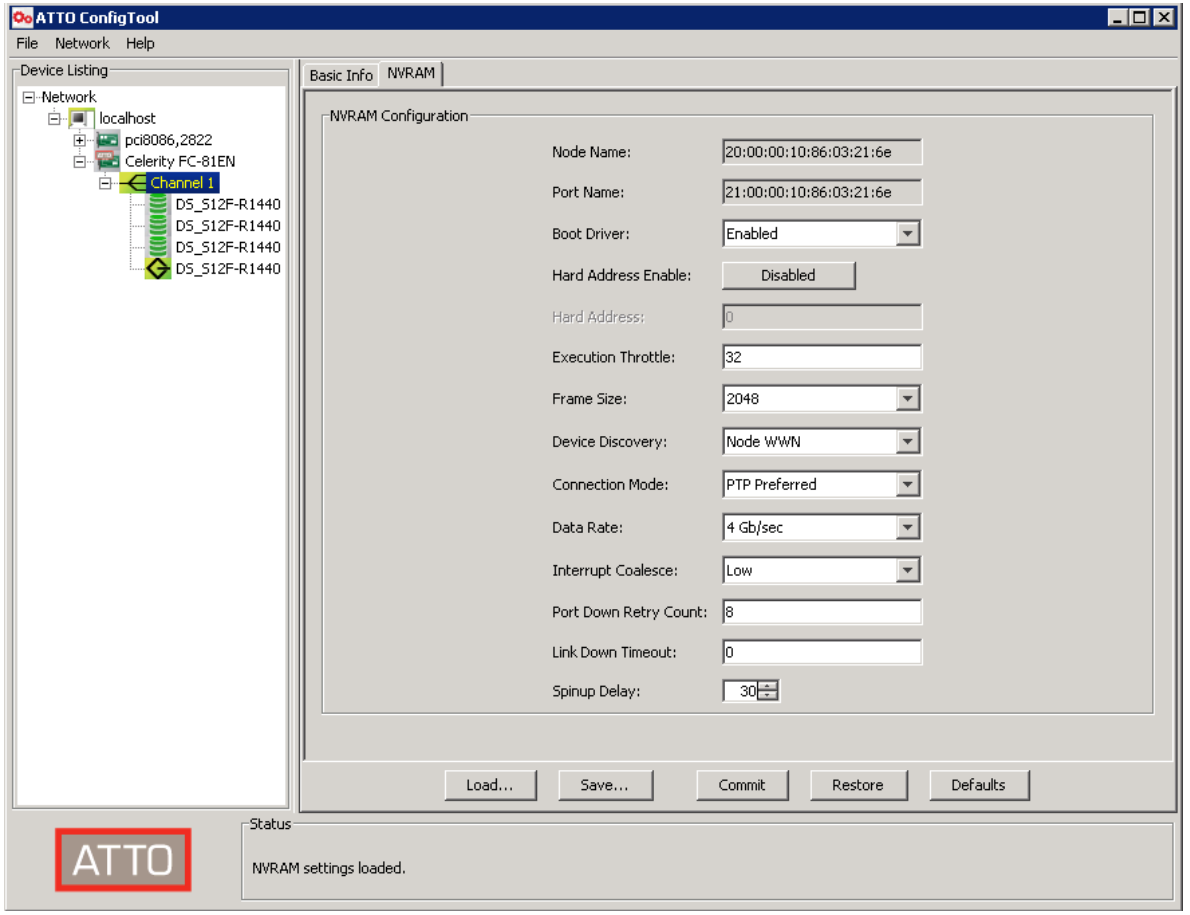
   The ATTO Configuration Tool dialog box opens.

2. In the Device Listing tree (left pane), click the expand box for "localhost."

   A login screen is displayed.



3. Type the user name and password for a local administrator account and click Login.
4. In the Device Listing tree, navigate to the appropriate channel on your host adapter.
5. Click the NVRAM tab.



6. Change the following settings if necessary:
   - Boot driver: Enabled.
   - Execution Throttle: 32
   - Device Discovery: Node WWN
   - Data Rate:
     - For connection to Infortrend, select 4 Gb/sec.
     - For connection to HP MSA, select 8 Gb/sec.
   - Interrupt Coalesce: Low
   - Spinup Delay: 30

   You can keep the default values for the other settings.
7. Click Commit.

8. Reboot the system.
9. Open the Configuration tool again and verify the new settings.
10. On the other node, repeat steps 1 through 6.

Changing Windows Server Settings on Each Node

Revision 4 and later images for the AS3000 Windows Server 2008 R2 Standard includes system settings that previously required manual changes. For information about these settings, see "Windows Server Settings Included in Revision 4 and Later Images" on page 116.

Removing the Application Server role is now recommended. See "Removing the Application Server Role from Each Node" on page 38.

Disabling IPv6 completely is no longer recommended. IPv6 is enabled in Rev. 4 and later images. However, binding network interface cards (NICs) to IPv6 is not recommended. See "Configuring the Public Network Adapter on Each Node" on page 47.

At the first boot after installing a Rev. 4 or later image, unique GUIDs are assigned to the network adapters used by the failover cluster. The registry might show the same GUID on different servers. This GUID is not used and you can ignore it.

Removing the Application Server Role from Each Node

This procedure is now recommended when preparing an SR2500 or AS3000 for Windows Server 2008 and an Interplay Engine cluster.

To remove the Application Server role:

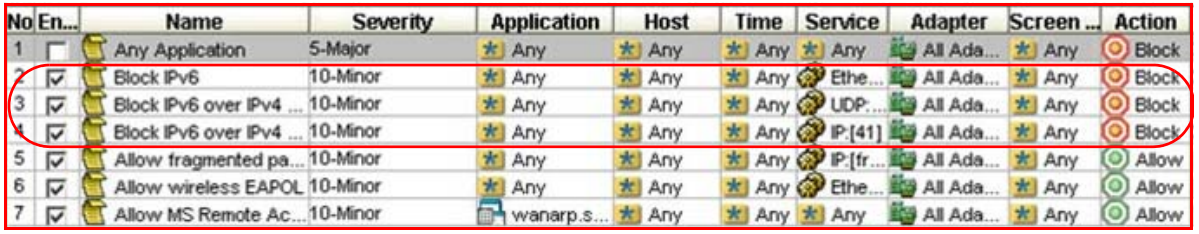
1. On node 1, Click Start > All Programs> Administrative Tools > Server Manager.
2. Click Roles on the left side of the window.
3. Click Remove Roles.

   The Remove Roles dialog box opens. Click Next.
4. Uncheck Application Server.
5. Click Next, then click Remove.
6. Follow the system prompts to remove the role. After you click the Close command, the server restarts and displays a confirmation window that reports the successful removal.
7. Repeat this procedure on node 2.

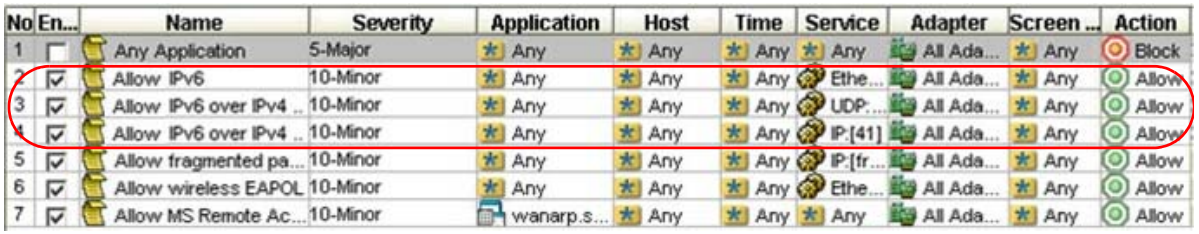
Configuring Local Software Firewalls

Make sure any local software firewalls used in a failover cluster, such as Symantec End Point (SEP), are configured to allow iPv6 communication and IPv6 over IPv4 communication.

Currently the SEP Firewall does not support IPv6. Allow this communication in the SEP Manager. Edit the rules shown in the following illustrations:



No	En...	Name	Severity	Application	Host	Time	Service	Adapter	Screen ...	Action
1	☐	Any Application	5-Major	Any	Any	Any	Any	All Ada...	Any	Block
2	☑	Block IPv6	10-Minor	Any	Any	Any	Ethe...	All Ada...	Any	Block
3	☑	Block IPv6 over IPv4 ...	10-Minor	Any	Any	Any	UDP:...	All Ada...	Any	Block
4	☑	Block IPv6 over IPv4 ...	10-Minor	Any	Any	Any	IP:[41]	All Ada...	Any	Block
5	☑	Allow fragmented pa...	10-Minor	Any	Any	Any	IP:[fr...	All Ada...	Any	Allow
6	☑	Allow wireless EAPOL	10-Minor	Any	Any	Any	Ethe...	All Ada...	Any	Allow
7	☑	Allow MS Remote Ac...	10-Minor	wanarp.s...	Any	Any	Any	All Ada...	Any	Allow



No	En...	Name	Severity	Application	Host	Time	Service	Adapter	Screen ...	Action
1	☐	Any Application	5-Major	Any	Any	Any	Any	All Ada...	Any	Block
2	☑	Allow IPv6	10-Minor	Any	Any	Any	Ethe...	All Ada...	Any	Allow
3	☑	Allow IPv6 over IPv4 ...	10-Minor	Any	Any	Any	UDP:...	All Ada...	Any	Allow
4	☑	Allow IPv6 over IPv4 ...	10-Minor	Any	Any	Any	IP:[41]	All Ada...	Any	Allow
5	☑	Allow fragmented pa...	10-Minor	Any	Any	Any	IP:[fr...	All Ada...	Any	Allow
6	☑	Allow wireless EAPOL	10-Minor	Any	Any	Any	Ethe...	All Ada...	Any	Allow
7	☑	Allow MS Remote Ac...	10-Minor	wanarp.s...	Any	Any	Any	All Ada...	Any	Allow

Renaming the Local Area Network Interface on Each Node

You need to rename the LAN interface on each node to appropriately identify each network. Although you can use any name for the network connections, Avid suggests that you use the naming conventions provided in the table in the following procedure.

Avid recommends that you use the same name on both nodes. Make sure the names and network connections on one node match the names and network connections on the other.

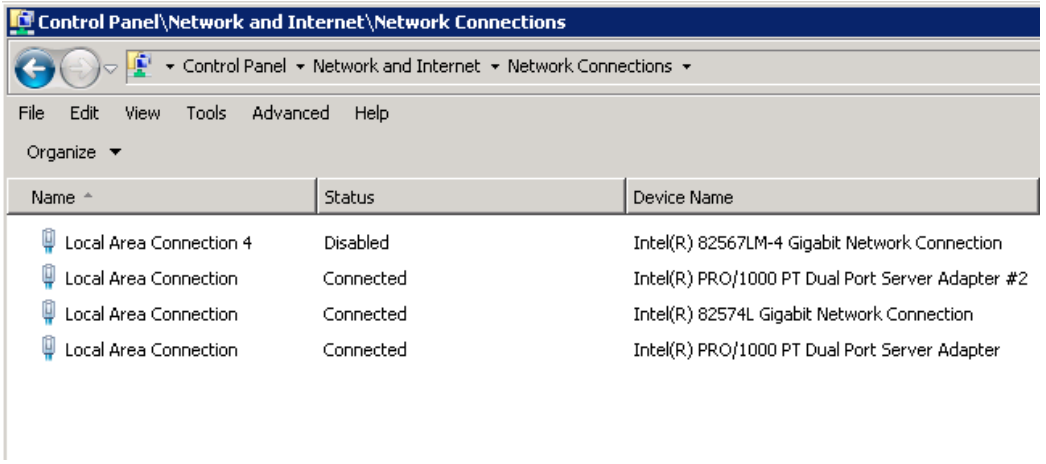
To rename the local area network connections:

1. On node 1, click Start > Control Panel > Network and Sharing Center.

   The Network and Sharing Center window opens.

2. Click “Change adapter settings” on the left side of the window.

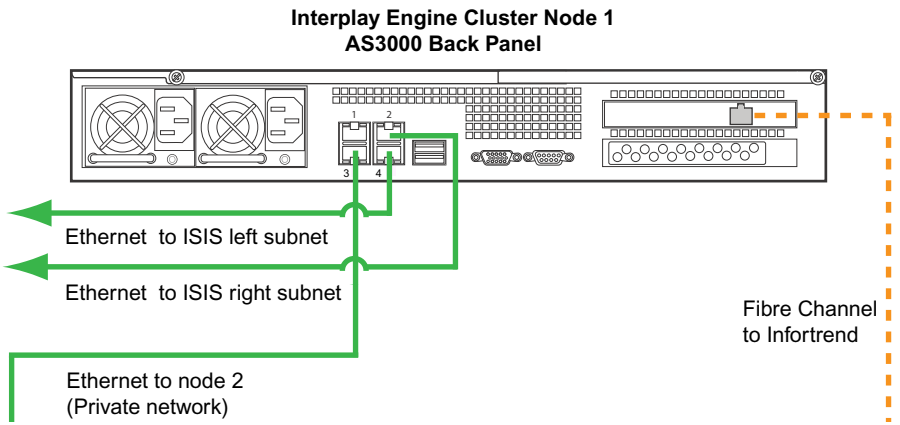
   The Network Connections window opens.



The top left network connector on the AS3000 (number 1) is not used and can be disabled. To disable it, select the corresponding Local Area Connection entry and select File > Disable.

3. Determine which numbered connection (physical port) refers to which device name. You can determine this by connecting one interface at a time. For example, you can start by determining which connection refers to the lower left network connection (the heartbeat connection numbered 3 on AS3000 back panel).

   Use the following illustration and table for reference. The illustration uses connections in a dual-connected Avid ISIS environment as an example.



Naming Network Connections

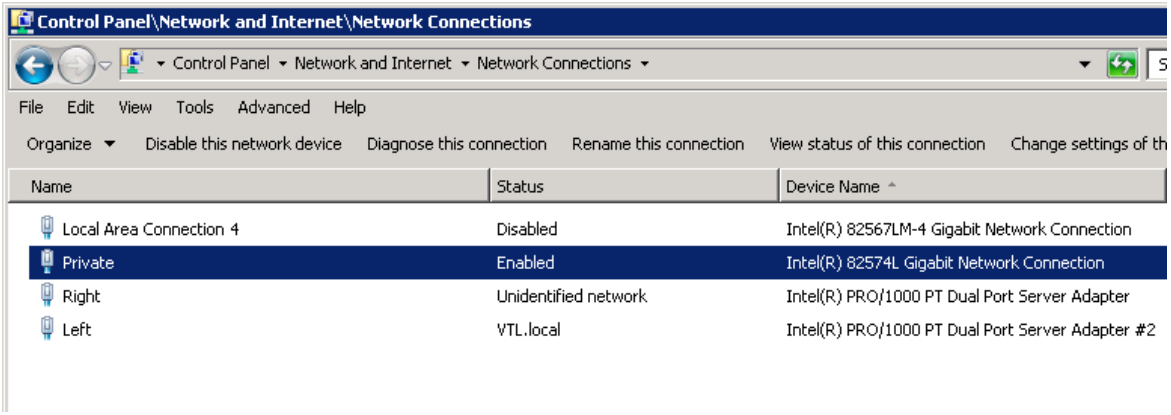
Network Interface	Label on AS3000	New Names (Redundant-switch configuration)	New Names (Dual-connected configuration)	Device Name
Top left network connector	1	Not used	Not used	Intel(R) 82567LM-4 Gigabit Network Connection
Top right network connector	2	Not used	**Right** This is a public network connected to network switch. You can include the subnet number of the interface. For example, Right-10.	Intel(R) PRO/1000 PT Dual Port Server Adapter
Bottom left network connector	3	**Private** This is a private network used for the heartbeat between the two nodes in the cluster.	**Private** This is a private network used for the heartbeat between the two nodes in the cluster.	Intel(R) 82574L Gigabit Network Connection
Bottom right network connector	4	**Public** This is a public network connected to a network switch	**Left** This is a public network connected to network switch. You can include the subnet number of the interface. For example, Left-20.	Intel(R) PRO/1000 PT Dual Port Server Adapter

4. Right-click a network connections and select Rename.

Avid recommends that both nodes use identical network interface names. Although you can use any name for the network connections, Avid suggests that you use the naming conventions provided in the previous table.

5. Depending on your Avid network and the device you selected, type a new name for the network connection and press Enter.
6. Repeat steps 4 and 5 for each network connection.

   The following Network Connections window shows the new names used in a dual-connected Avid ISIS environment.


Control Panel\Network and Internet\Network Connections
Control Panel ▸ Network and Internet ▸ Network Connections ▸
File Edit View Tools Advanced Help
Organize ▾ Disable this network device Diagnose this connection Rename this connection View status of this connection Change settings of th
Name
Status
Device Name
Local Area Connection 4
Disabled
Intel(R) 82567LM-4 Gigabit Network Connection
Private
Enabled
Intel(R) 82574L Gigabit Network Connection
Right
Unidentified network
Intel(R) PRO/1000 PT Dual Port Server Adapter
Left
VTL.local
Intel(R) PRO/1000 PT Dual Port Server Adapter #2

7. Close the Network Connections window.
8. Repeat this procedure on node 2, using the same names that you used for node 1.

Configuring the Private Network Adapter on Each Node

Repeat this procedure on each node.

To configure the private network adapter for the heartbeat connection:

1. On node 1, click Start > Control Panel > Network and Sharing Center.

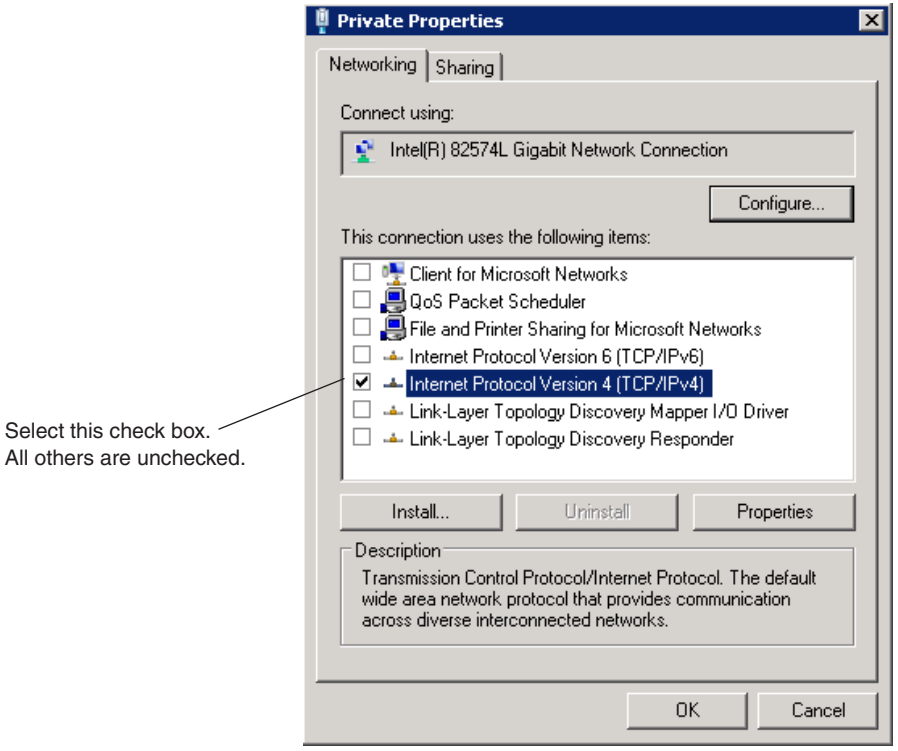
   The Network and Sharing Center window opens.
2. Click “Change adapter settings” on the left side of the window.

   The Network Connections window opens.
3. Right-click the Private network connection (Heartbeat) and select Properties.

   The Private Properties dialog box opens.

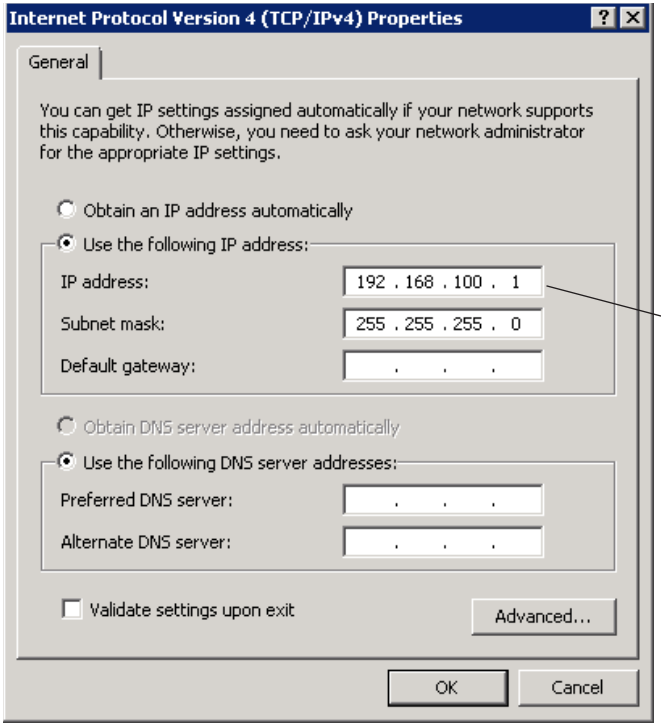
4. On the Networking tab, click the following check box:
   - Internet Protocol Version 4 (TCP/IPv4)

   Uncheck all other components.



5. Select Internet Protocol Version 4 (TCP/IPv4) and click Properties.

   The Internet Protocol Version 4 (TCP/IPv4) Properties dialog box opens.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 100 . 1
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel
Type the private IP address for the node you are configuring.

6. On the General tab of the Internet Protocol (TCP/IP) Properties dialog box:

   a. Select “Use the following IP address.”

   b. IP address: type the IP address for the Private network connection for the node you are configuring. See “List of IP Addresses and Network Names” on page 31.

When performing this procedure on the second node in the cluster, make sure you assign a static private IP address unique to that node. In this example, node 1 uses 192.168.100.1 and node 2 uses 192. 168. 100. 2.

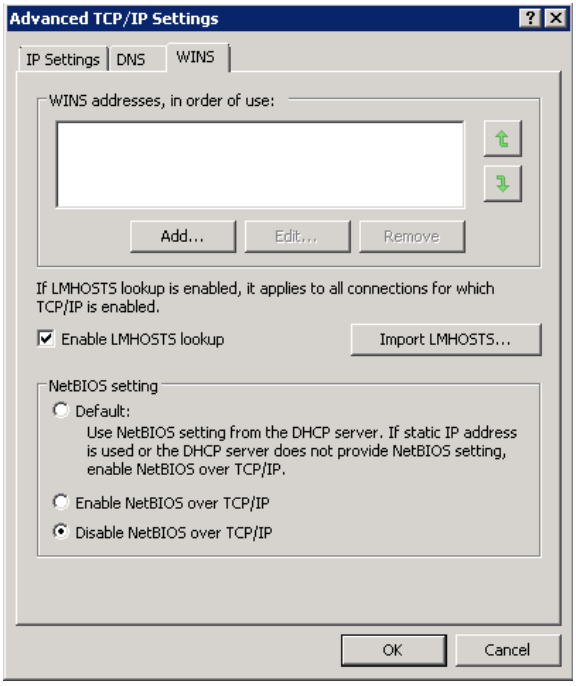
   c. Subnet mask: type the subnet mask address

Make sure you use a completely different IP address scheme from the one used for the public network.

d. Make sure the “Default gateway” and “Use the Following DNS server addresses” text boxes are empty.

7. Click Advanced.

   The Advanced TCP/IP Settings dialog box opens.


Advanced TCP/IP Settings
IP Settings
DNS
WINS
WINS addresses, in order of use:
Add...
Edit...
Remove
If LMHOSTS lookup is enabled, it applies to all connections for which TCP/IP is enabled.
Enable LMHOSTS lookup
Import LMHOSTS...
NetBIOS setting
Default:
Use NetBIOS setting from the DHCP server. If static IP address is used or the DHCP server does not provide NetBIOS setting, enable NetBIOS over TCP/IP.
Enable NetBIOS over TCP/IP
Disable NetBIOS over TCP/IP
OK
Cancel

8. On the DNS tab, make sure no values are defined and that the “Register this connection’s addresses in DNS” and “Use this connection’s DNS suffix in DNS registration” are not selected.
9. On the WINS tab, do the following:
   - Make sure no values are defined in the WINS addresses area.
   - Make sure “Enable LMHOSTS lookup” is selected.
   - Select “Disable NetBIOS over TCP/IP.”
10. Click OK.

    A message might by displayed stating “This connection has an empty primary WINS address. Do you want to continue?” Click Yes.
11. Repeat this procedure on node 2, using the static private IP address for that node.

Configuring the Binding Order Networks on Each Node

Repeat this procedure on each node and make sure the configuration matches on both nodes.

To configure the binding order networks:

1. On node 1, click Start > Control Panel > Network and Sharing Center.

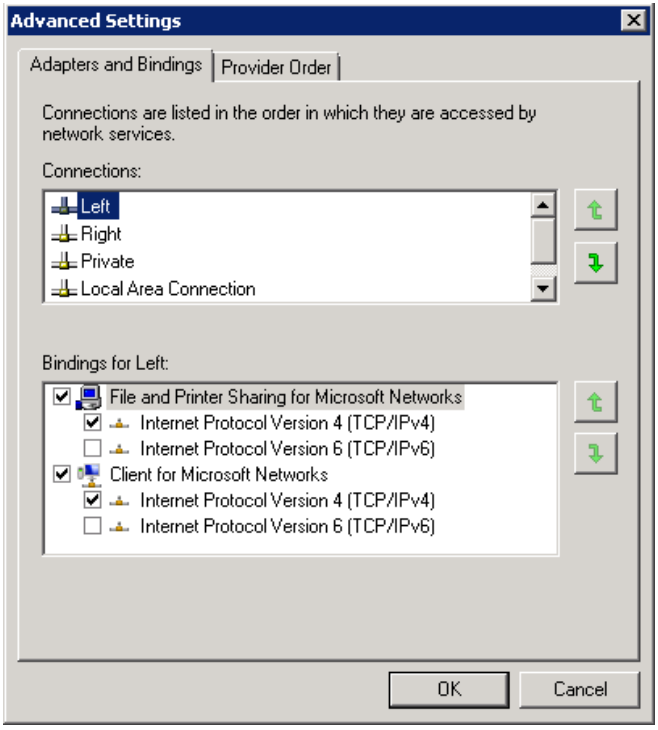
   The Network and Sharing Center window opens.

2. Click “Change adapter settings” on the left side of the window.

   The Network Connections window opens.

3. From the Advanced menu, select Advanced Settings.

   The Advanced Settings dialog box opens.

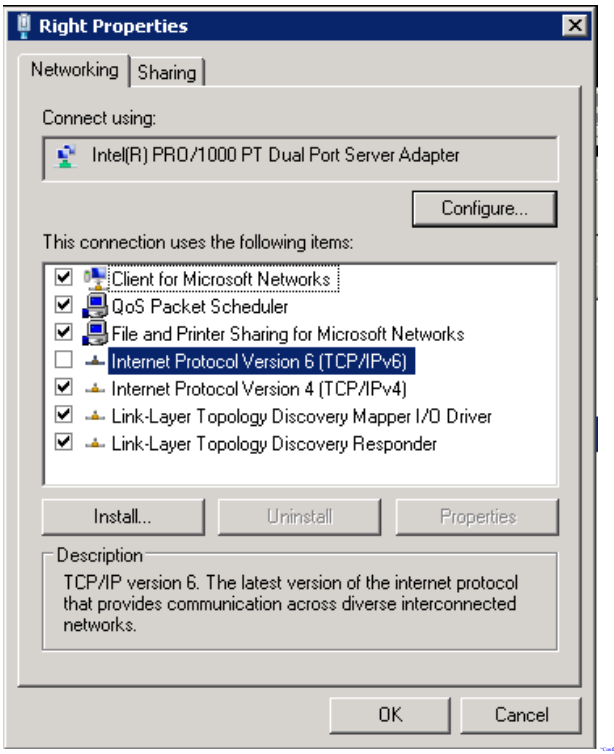


4. In the Connections area, use the arrow controls to position the network connections in the following order:
   - For a redundant-switch configuration in an Avid ISIS environment, use the following order:
     - Public
     - Private
   - For a dual-connected configuration in an Avid ISIS environment, use the following order, as shown in the illustration:
     - Left
     - Right
     - Private
5. Click OK.
6. Repeat this procedure on node 2 and make sure the configuration matches on both nodes.

Configuring the Public Network Adapter on Each Node

Make sure you configure the IP address network interfaces for the public network adapters as you normally would. For examples of public network settings, see “List of IP Addresses and Network Names” on page 31.

Avid recommends that you disable IPv6 for the public network adapters, as shown in the following illustration:



"Configuring the Public Network Adapter on Each Node" on page 47

Configuring the Cluster Shared-Storage RAID Disks on Each Node

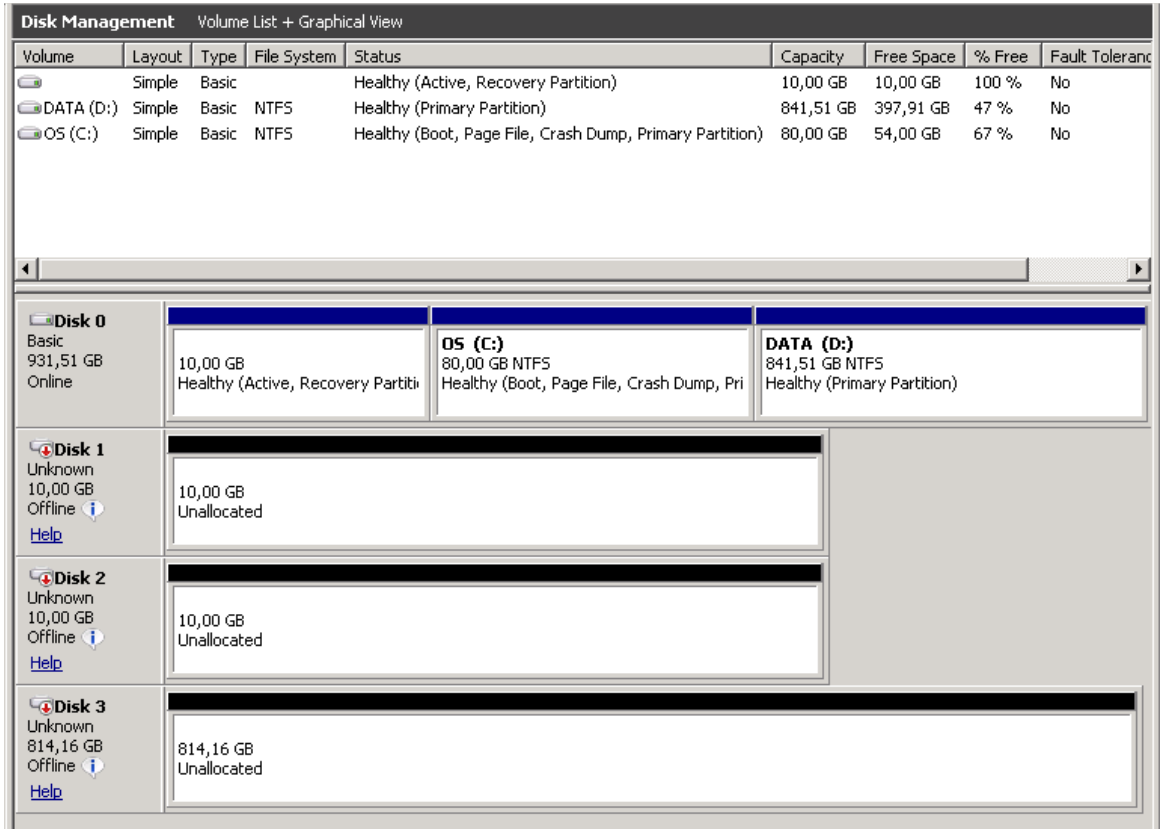
Both nodes must have the same configuration for the cluster shared-storage RAID disk. When you configure the disks on the second node, make sure the disks match the disk configuration you set up on the first node.

Make sure the disks are Basic and not Dynamic.

To configure the shared-storage RAID disks on each node:

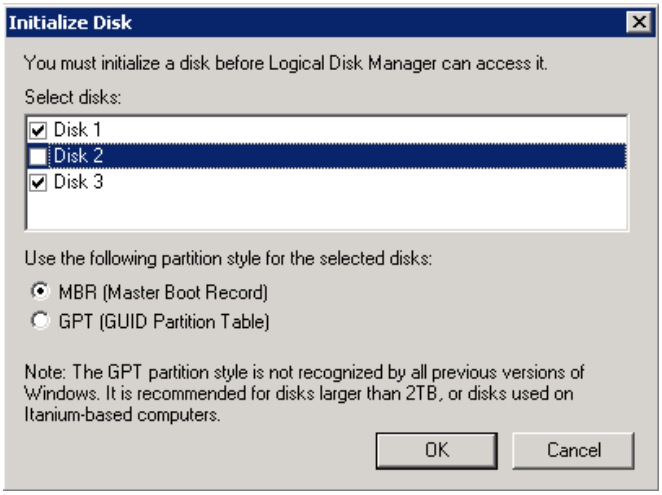
1. Shut down the server node you are not configuring at this time.
2. Open the Disk Management tool in one of the following ways:
   - Right-click My Computer and select Manage. In the Server Manager list, select Storage > Disk Management.
   - Click Start, type Disk, and select “Create and format hard drive.”

The Disk Management window opens. The following illustration shows the shared storage drives labeled Disk 1, Disk 2, and Disk 3. In this example they are offline, not initialized, and unformatted.



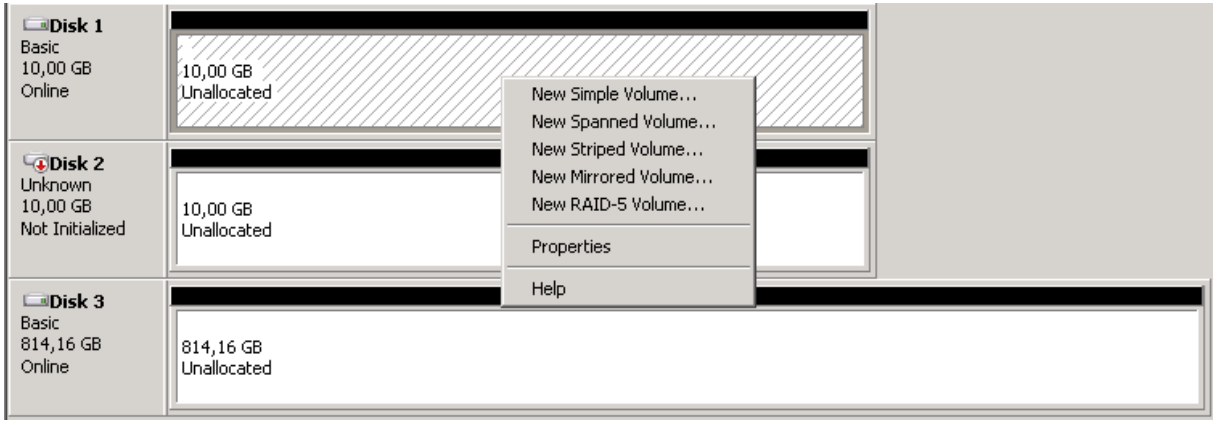
3. If the disks are offline, right-click Disk 1 (in the left column) and select Online. Repeat this action for Disk 3. Do not bring Disk 2 online.
4. If the disks are not already initialized, right-click Disk 1 (in the left column) and select Initialize Disk.

   The Initialize Disk dialog box opens.


Initialize Disk
You must initialize a disk before Logical Disk Manager can access it.
Select disks:
Disk 1
Disk 2
Disk 3
Use the following partition style for the selected disks:
MBR (Master Boot Record)
GPT (GUID Partition Table)
Note: The GPT partition style is not recognized by all previous versions of Windows. It is recommended for disks larger than 2TB, or disks used on Itanium-based computers.
OK
Cancel

Select Disk 1 and Disk 3 and make sure that MBR is selected. Click OK.

5. Use the New Simple Volume wizard to configure the disks as partitions. Right-click each disk, select New Simple Volume, and follow the instructions in the wizard.



Use the following names and drive letters:

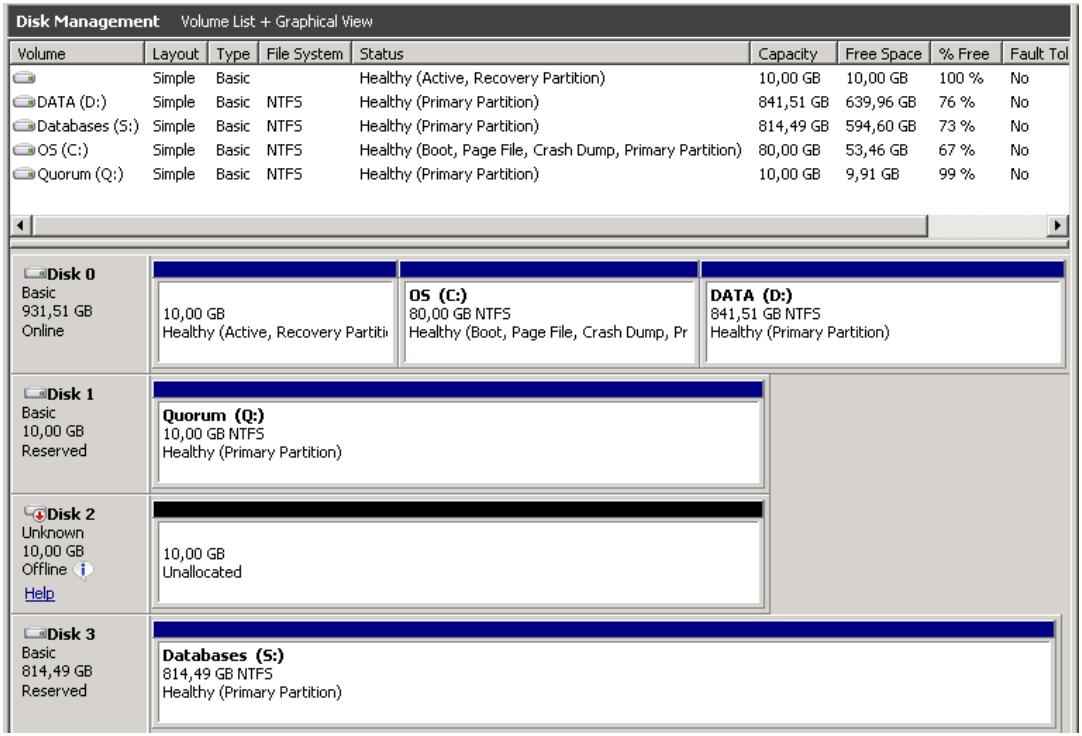
Disk	Name and Drive Letter	Infortrend S12F-R1440
Disk 1	Quorum (Q:)	10 GB
Disk 3	Databases (S:)	814 GB or larger

Do not assign a name or drive letter to Disk 2.

Disk	Name and Drive Letter	HP MSA 2400
Disk 1	Quorum (Q:)	10 GB
Disk 2	Databases (S:)	870 GB or larger

If you need to change the drive letter after running the wizard, right-click the drive letter in the right column and select Change Drive Letter or Path. If you receive a warning tells you that some programs that rely on drive letters might not run correctly and asks if you want to continue. Click Yes.

The following illustration shows Disk 1 and Disk 3 with the required names and drive letters for the Infortrend S12F-R1440:



The display is similar for the HP MSA 2400, but there are only two disks displayed.

6. Verify you can access the disk and that it is working by creating a file and deleting it.
7. Shut down the first node and start the second node.

8. On the second node, bring the disks online and assign drive letters. You do not need to initialize or format the disks.
   a. Open the Disk Management tool, as described in step 2.
   b. Bring Disk 1 and Disk 3 online, as described in step 3.
   c. Right-click a partition, select Change Drive Letter, and enter the appropriate letter.
   d. Repeat these actions for the other partitions.
9. Boot the first node.
10. Open the Disk Management tool to make sure that the disks are still online and have the correct drive letters assigned.

    At this point, both nodes should be running.

Configuring the Cluster Service

Take the following steps to configure the cluster service:

1. Add the servers to the domain. See "Joining Both Servers to the Active Directory Domain" on page 52.
2. Install the Failover Clustering feature. See "Installing the Failover Clustering Feature" on page 53.
3. Start the Create Cluster Wizard on the first node. See "Creating the Cluster Service" on page 55. This procedure creates the cluster service for both nodes.
4. Rename the cluster networks. See "Renaming the Cluster Networks in the Failover Cluster Manager" on page 61.
5. Rename and delete the cluster disks. See "Renaming Cluster Disk 1 and Deleting the Remaining Cluster Disks" on page 63.
6. For a dual-connected configuration, add a second IP address. See "Adding a Second IP Address to the Cluster" on page 66.
7. Test the failover. See "Testing the Cluster Installation" on page 71.

Creating the cluster service requires an account with particular administrative privileges. For more information, see "Requirements for Domain User Accounts" on page 29.

Joining Both Servers to the Active Directory Domain

After configuring the network information, join the two servers to the Active Directory domain. Each server requires a reboot to complete this process. At the login window, use the domain administrator account (see "Requirements for Domain User Accounts" on page 29).

Installing the Failover Clustering Feature

The Failover Clustering feature is a Windows Server 2008 feature that contains the complete Failover functionality.

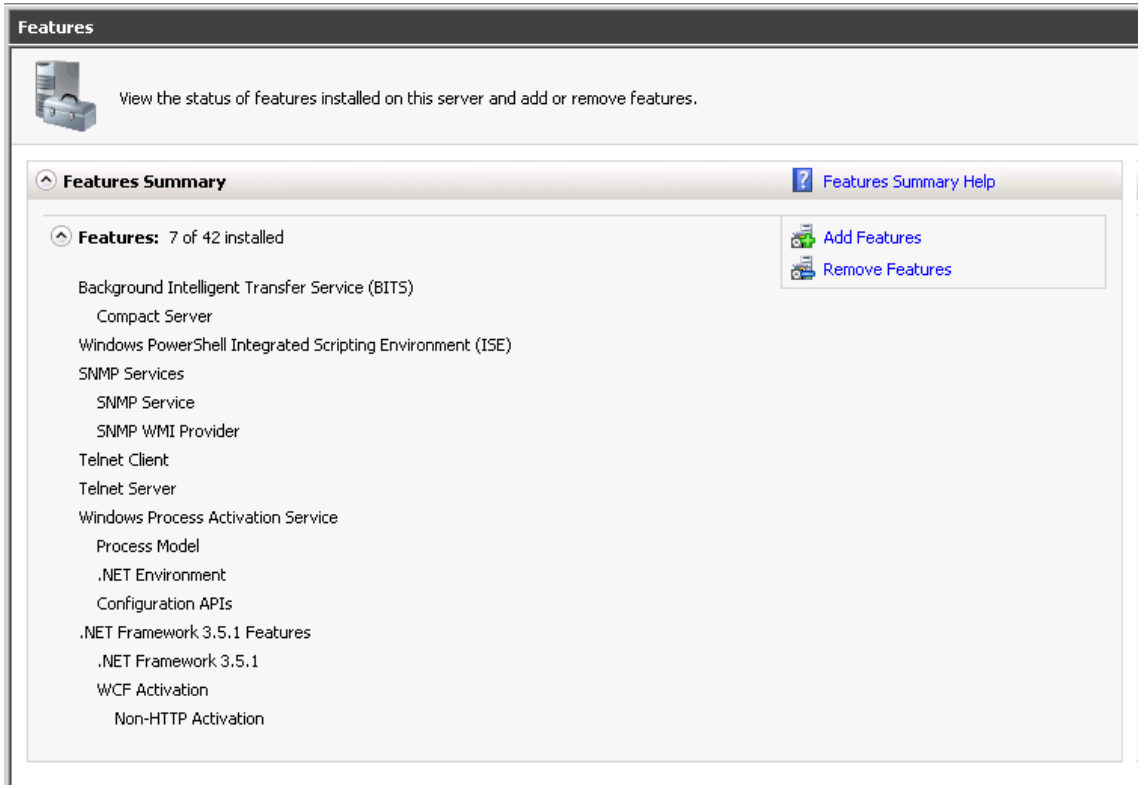
The Failover Cluster Manager, which is a snap-in to the Server Manager, is installed as part of the Failover Clustering installation.

To install the Failover Clustering featurer:

1. On the first node, right-click My Computer and select Manage.

   The Server Manager window opens.

2. In the Server Manager list, click Features.
3. On the right-side of the Features window, click Add Features.



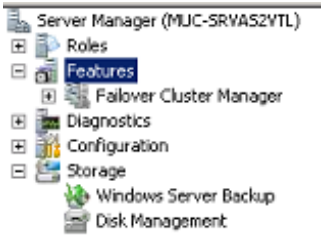
A list of features is displayed.

If a list of Features does not display and "Error" is displayed instead, see "Displaying the List of Server Features" on page 54.

4. Select Failover Clustering from the list of features and click Next.
5. On the next screen, click Install.

   The Failover Cluster Manager installation program starts. At the end of the installation, a message states that the installation was successful.
6. Click Close.

   To check if the feature was installed, open the Server Manager and open Features. The Failover Cluster Manager should be displayed.



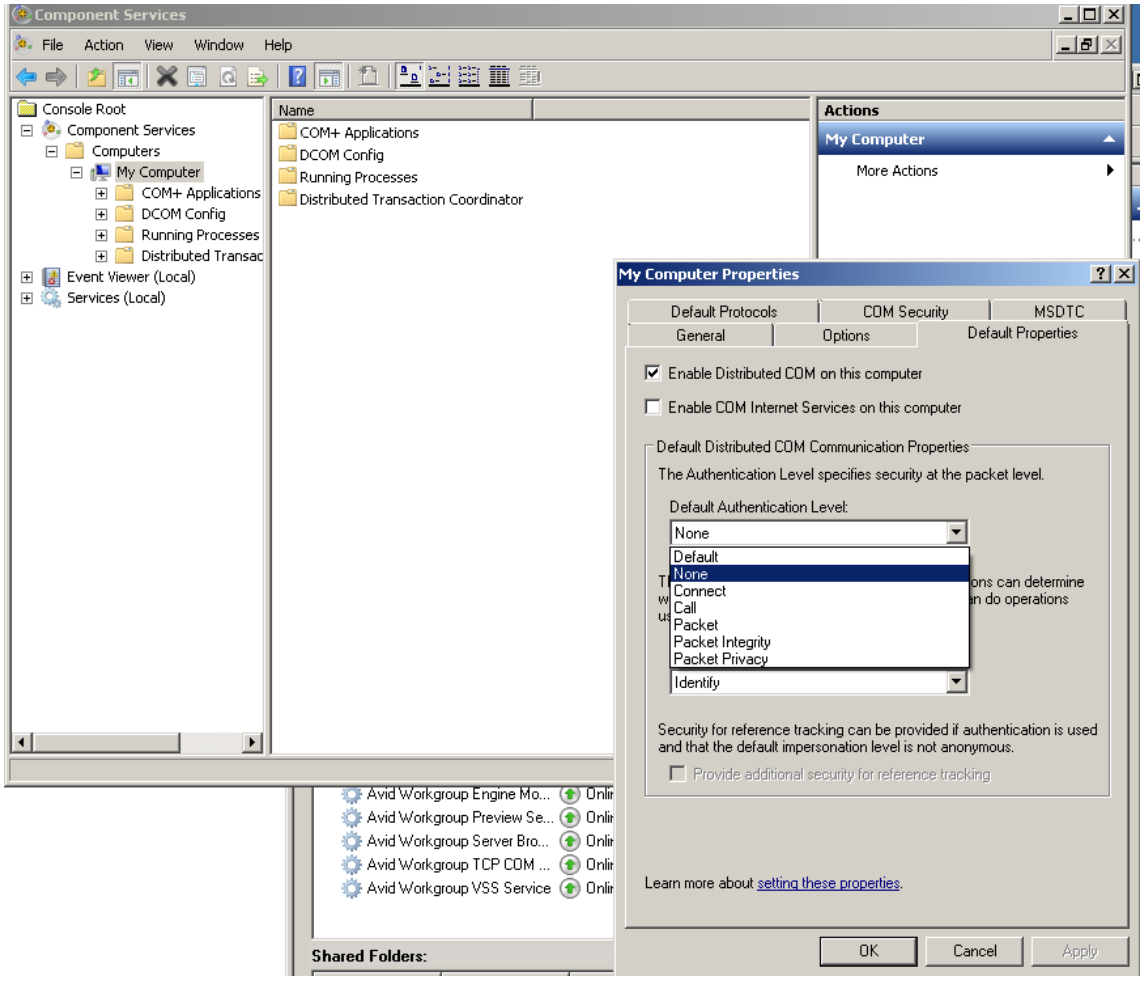
7. Repeat this procedure on the second node.

Displaying the List of Server Features

If a list of server features does not display and “Error” is displayed instead, change the Default Authentication Level as described in the following procedure.

To display the list of server features:

1. Click Start, the select Administrative Tools > Component Services.
2. In the directory tree, expand Component Services, expand Computers, right-click My Computer, and select Properties.
3. Click the Default Properties tab.
4. In the Default Distributed COM Communication Properties section, change the Default Authentication Level from None to Connect.



5. Click OK.

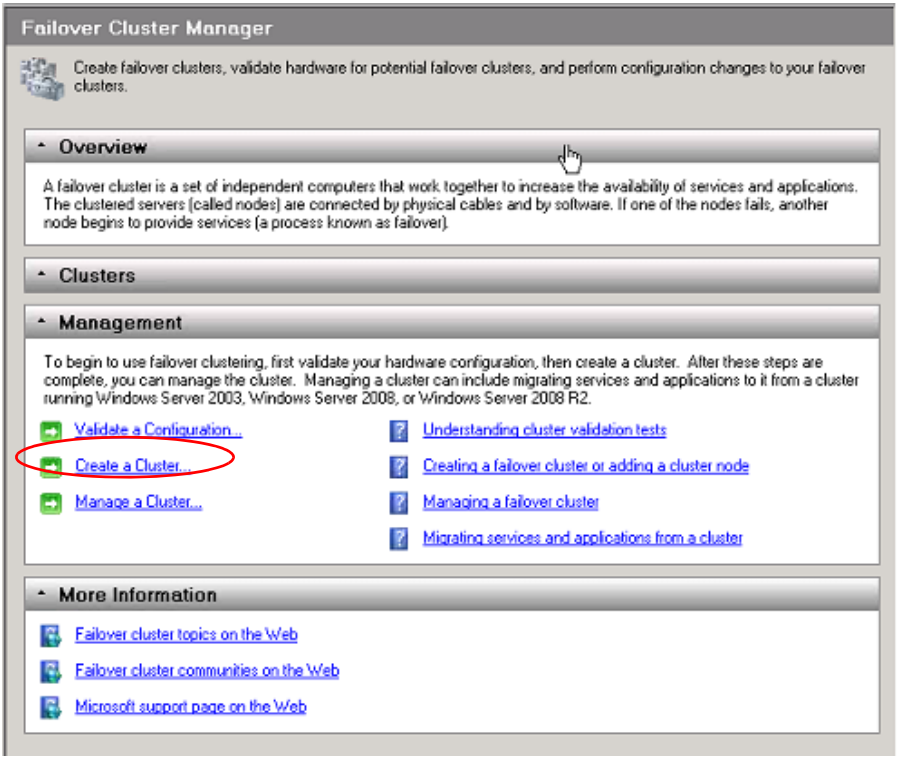
Creating the Cluster Service

To create the cluster service:

1. Make sure all storage devices are turned on.
2. Log in to the operating system using the cluster installation account (see “Requirements for Domain User Accounts” on page 29).
3. On the first node, right-click My Computer and select Manage.

   The Server Manager window opens.
4. In the Server Manager list, open Features and click Failover Cluster Manager.

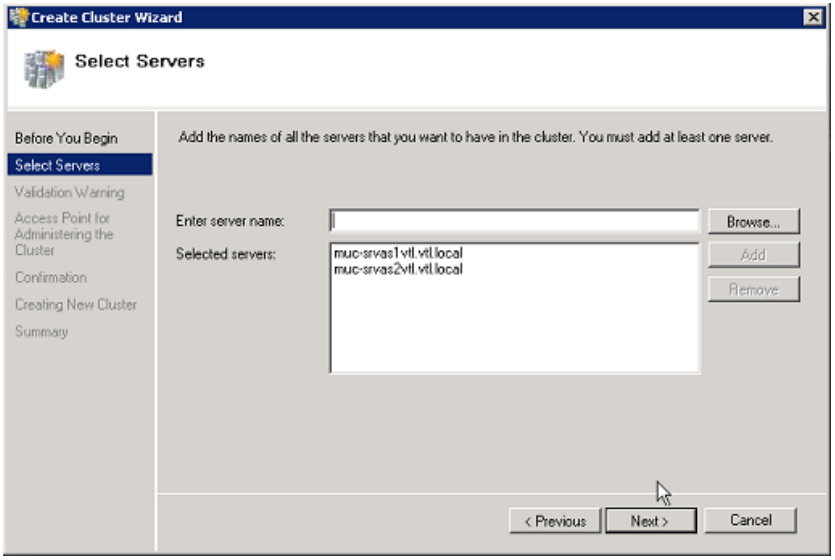
5. Click Create a Cluster.


Failover Cluster Manager
Create failover clusters, validate hardware for potential failover clusters, and perform configuration changes to your failover clusters.
Overview
A failover cluster is a set of independent computers that work together to increase the availability of services and applications. The clustered servers (called nodes) are connected by physical cables and by software. If one of the nodes fails, another node begins to provide services (a process known as failover).
Clusters
Management
To begin to use failover clustering, first validate your hardware configuration, then create a cluster. After these steps are complete, you can manage the cluster. Managing a cluster can include migrating services and applications to it from a cluster running Windows Server 2003, Windows Server 2008, or Windows Server 2008 R2.
Validate a Configuration...
Create a Cluster...
Manage a Cluster...
Understanding cluster validation tests
Creating a failover cluster or adding a cluster node
Managing a failover cluster
Migrating services and applications from a cluster
More Information
Failover cluster topics on the Web
Failover cluster communities on the Web
Microsoft support page on the Web

The Create Cluster Wizard opens with the Before You Begin window.

6. Review the information and click Next (you will validate the cluster in a later step).

7. In the Select Servers window, type the simple computer name of node 1 and click Add. Then type the computer name of node 2 and click Add. The Cluster Wizard checks the entries and, if the entries are valid, lists the fully qualified domain names in the list of servers, as shown in the following illustration:



If you cannot add the remote node to the cluster, and receive an error message "Failed to connect to the service manager on *<computer-name>*," check the following:
- Make sure that the time settings for both nodes are in sync.
- Make sure that the login account is a domain account with the required privileges.
- Make sure the Remote Registry service is enabled.
For more information, see "Before You Begin the Server Failover Installation" on page 34.

8. Click Next.

   The Validation Warning window opens.

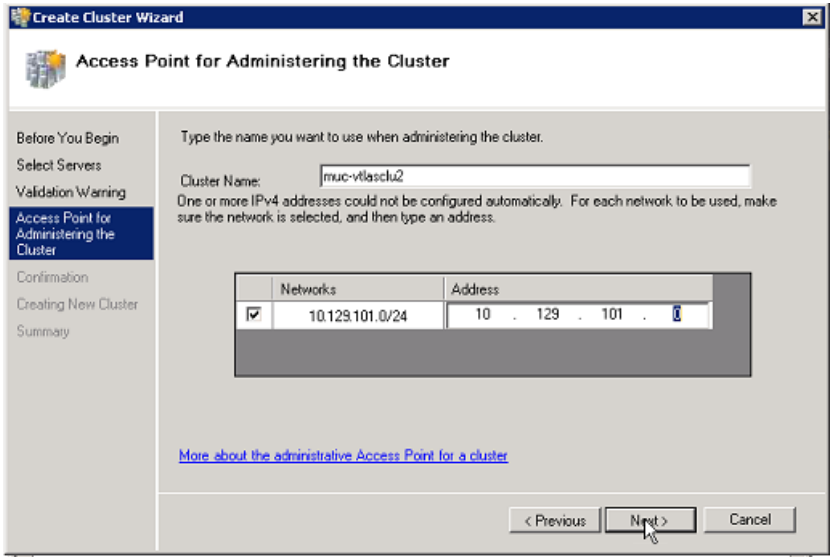
9. Select Yes and click Next several times. When you can select a testing option, select Run All Tests.

   The automatic cluster validation tests begin. The tests can take up to twenty minutes. After running these validation tests and receiving notification that the cluster is valid, you are eligible for technical support from Microsoft.

   The following tests display warnings, which you can ignore:

   - Validate SCSI device Vital Product Data (VPD)
   - Validate All Drivers Signed
   - Validate Memory Dump Settings

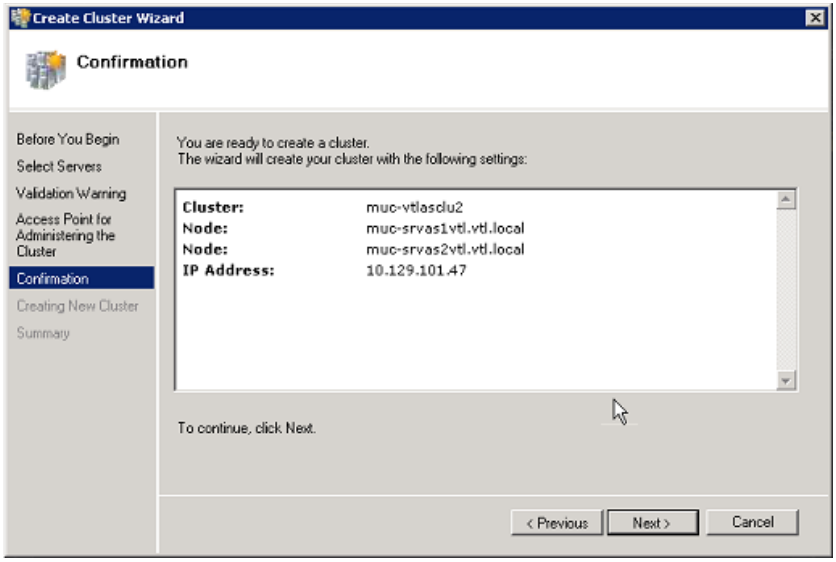
10. In the Access Point for Administering the Cluster window, type a name for the cluster, then click in the Address text box and enter an IP address.


Create Cluster Wizard
Access Point for Administering the Cluster
Before You Begin
Select Servers
Validation Warning
Access Point for Administering the Cluster
Confirmation
Creating New Cluster
Summary
Type the name you want to use when administering the cluster.
Cluster Name:
muc-vtlasclu2
One or more IPv4 addresses could not be configured automatically. For each network to be used, make sure the network is selected, and then type an address.
Networks
Address
10.129.101.0/24
10 . 129 . 101 .
More about the administrative Access Point for a cluster
< Previous
Next >
Cancel

If you are configuring a dual-connected cluster, you need to add a second IP address after renaming and deleting cluster disks. This procedure is described in “Adding a Second IP Address to the Cluster” on page 66.

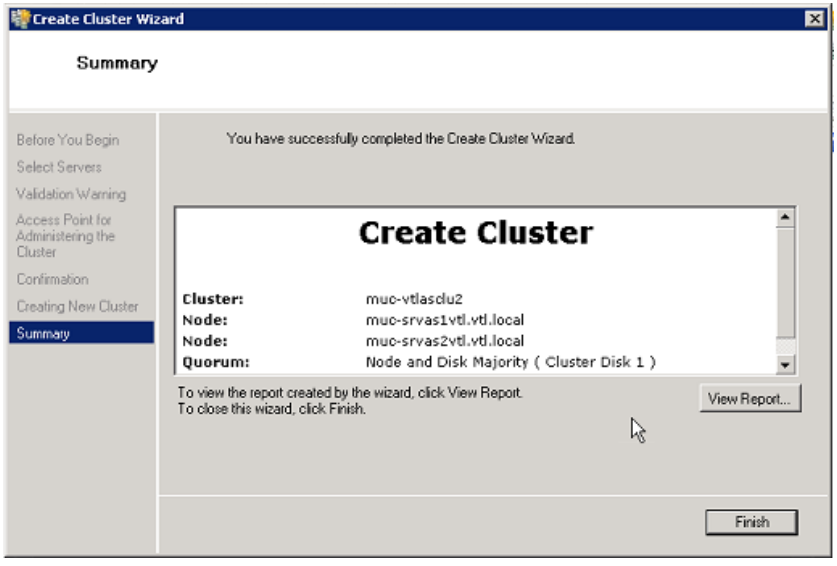
11. Click Next.

A message informs you that the system is validating settings. At the end of the process, the Confirmation window opens.



12. Review the information and if it is correct, click Next.

    The Create Cluster Wizard creates the cluster. At the end of the process, a Summary window opens and displays information about the cluster.

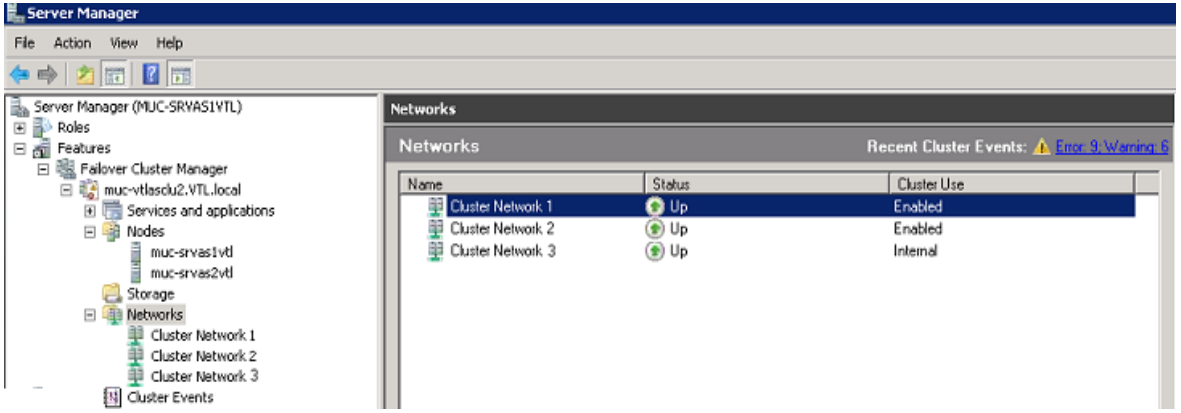


    You can click View Report to see a log of the entire cluster creation.

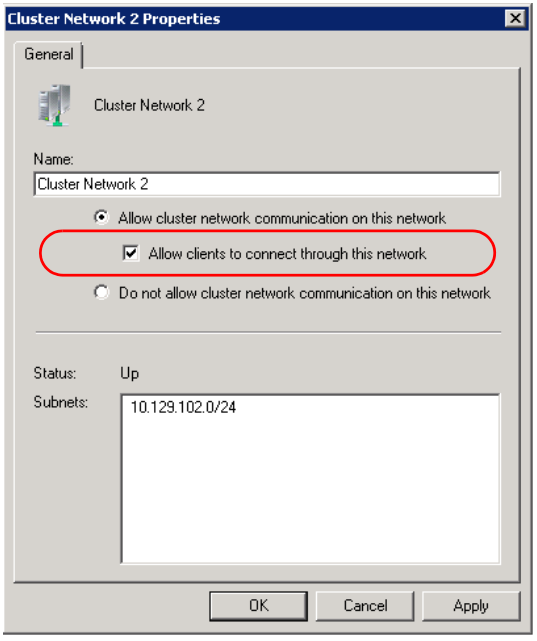
13. Click Finish.

Now when you open the Failover Cluster Manager in the Server Manager, the cluster you created and information about its components are displayed, including the networks available to the cluster (cluster networks).

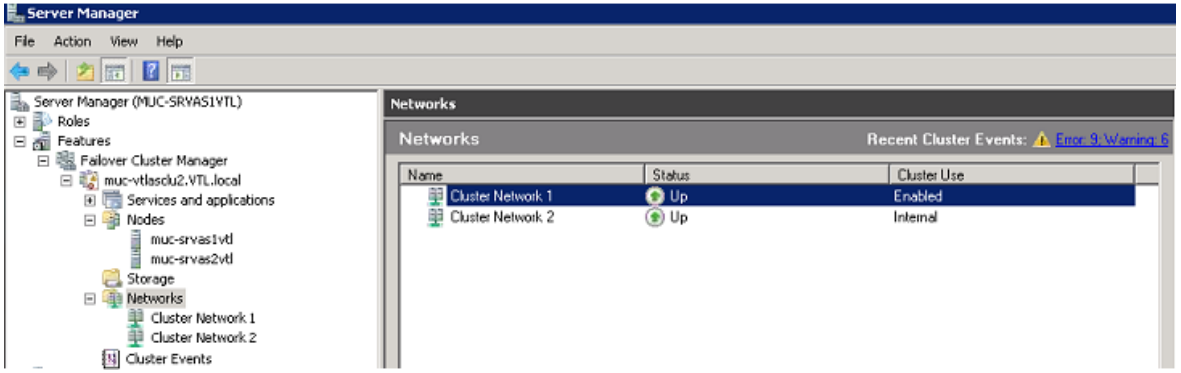
The following illustration shows components of a dual-connected cluster. Cluster Network 1 and Cluster Network 2 are external networks connected to VLAN 10 and VLAN 20 on Avid ISIS, and Cluster Network 3 is a private, internal network for the heartbeat.



It is possible that Cluster Network 2 (usually Right or VLAN 20) is not configured to be external by the Create Cluster Wizard. In this case, right-click Cluster Network 2, select Properties, and check “Allow clients to connect through this network.”



The following illustration shows components of a cluster in a redundant-switch ISIS environment. Cluster Network 1 is an external network connecting to one of the redundant switches, and Cluster Network 2 is a private, internal network for the heartbeat.



Renaming the Cluster Networks in the Failover Cluster Manager

You can more easily manage the cluster by renaming the networks that are listed under the Failover Cluster Manager.

To rename the networks:

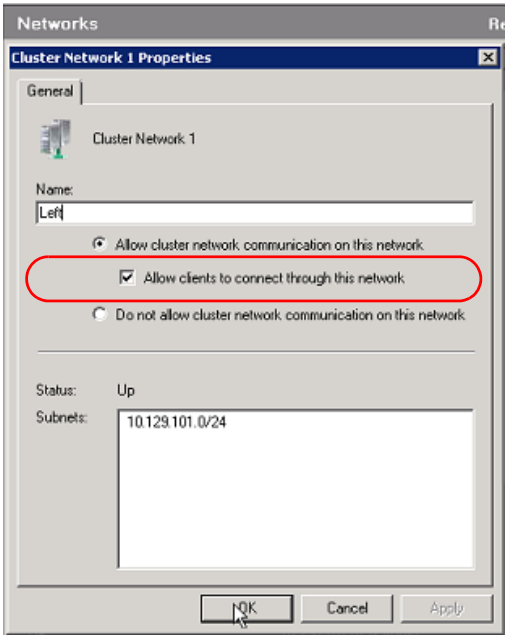
1. Right-click My Computer and select Manage.

   The Server Manager window opens.

2. In the Server Manager list, open Features > Failover Cluster Manager > *cluster_name*.
3. Click Networks.
4. In the Networks window, right-click Cluster Network 1 and select Properties.

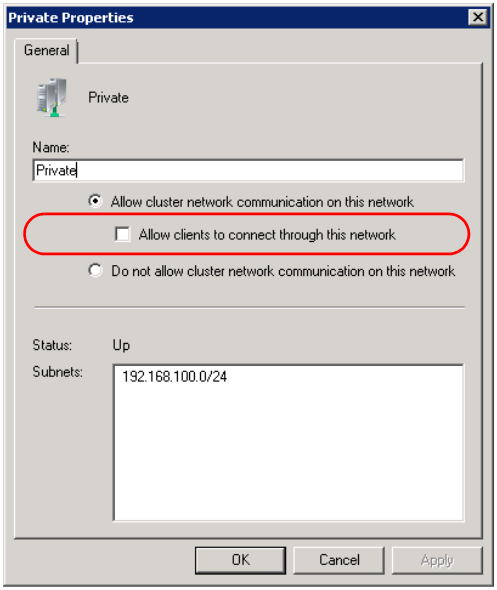
The Properties dialog box opens.

5. Click in the Name text box, and type a meaningful name, for example, a name that matches the name you used in the TCP/IP properties. For a redundant-switch configuration, use Public. For a dual-connected configuration, use Left, as shown in the following example. For this network, keep the option “Allow clients to connect through this network.”



6. Click OK.
7. If you are configuring a dual-connected cluster configuration, rename Cluster Network 2, using Right. For this network, keep the option “Allow clients to connect through this network.”

8. Rename the other network Private. This network is used for the heartbeat.



For this private network, leave the option “Allow clients to connect through this network” unchecked.

Renaming Cluster Disk 1 and Deleting the Remaining Cluster Disks

You can more easily manage the cluster by renaming Cluster Disk 1, which is listed under the Failover Cluster Manager.

You must delete any disks other than Cluster Disk 1 that are listed. In this operation, deleting the disks means removing them from cluster control. After the operation, the disks are labeled offline in the Disk Management tool. This operation does not delete any data on the disks.

Cluster Disk 2 is not used. You bring the Databases (S:) drive back online in a later step (“Bringing the Shared Database Drive Online” on page 76).

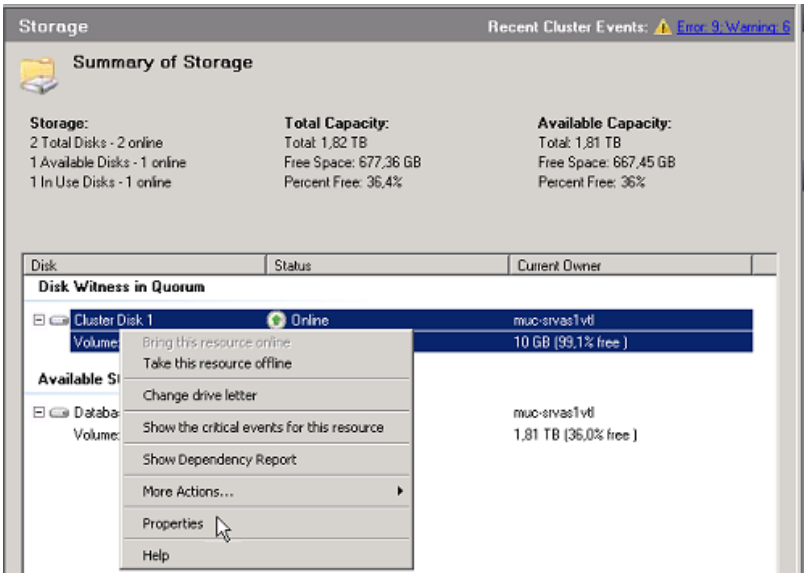
Before renaming or deleting disks, make sure you select the correct disk by checking the drive letter, either in the Properties dialog box or by expanding Cluster Disks in the Summary of Storage screen.

To rename Cluster Disk 1:

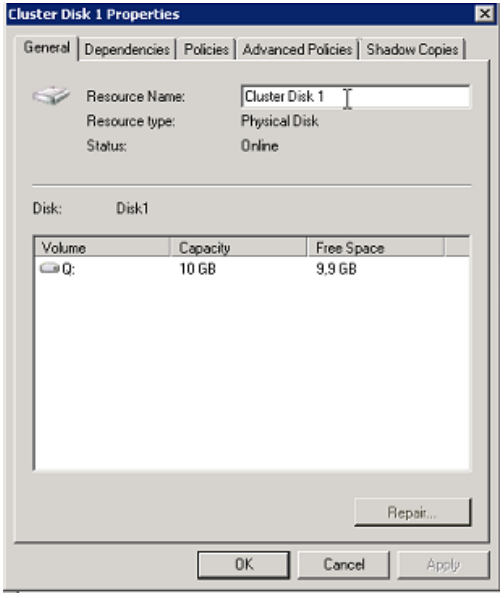
1. Right-click My Computer and select Manage.

   The Server Manager window opens.

2. In the Server Manager list, open Features > Failover Cluster Manager > *cluster_name*.
3. Click Storage.
4. In the Storage window, right-click Cluster Disk 1 and select Properties.



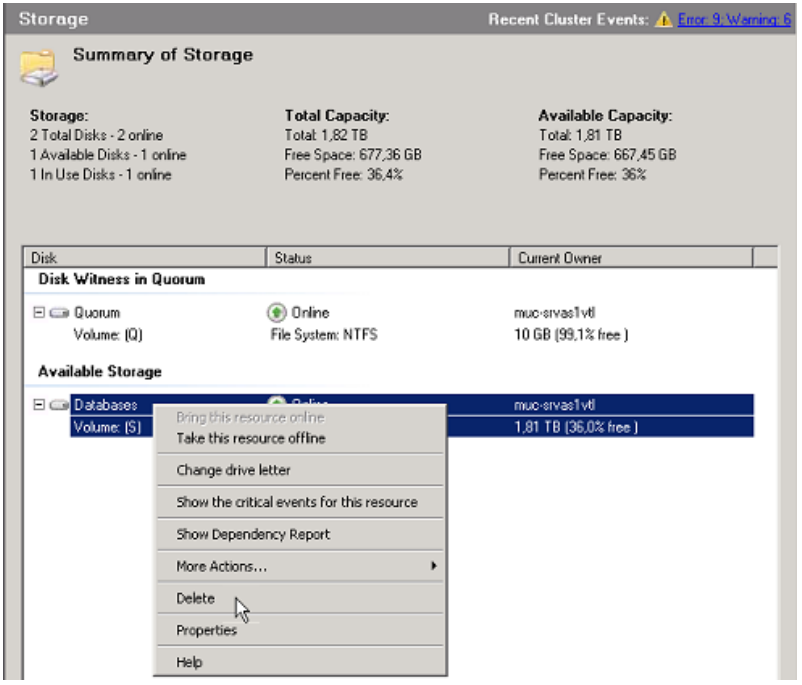
The Properties dialog box opens.



5. In the Resource Name dialog box, type a name for the cluster disk. In this case, Cluster Disk 1 is the Quorum disk, so type Quorum as the name.

To remove all disks other than Cluster Disk 1 (Quorum)

1. In the Storage window, right-click Cluster Disk 2 and select Delete.
2. In the Storage window, right-click Cluster Disk 3 if available (or Databases, if you renamed it) and select Delete.



Adding a Second IP Address to the Cluster

If you are configuring a dual-connected cluster, you need to add a second IP address for the cluster application (virtual server).

To add a second IP address to the cluster:

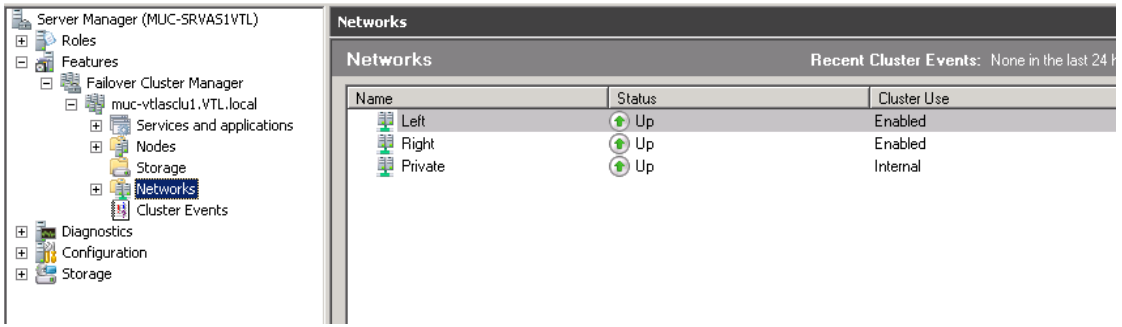
1. Right-click My Computer and select Manage.

   The Server Manager window opens.

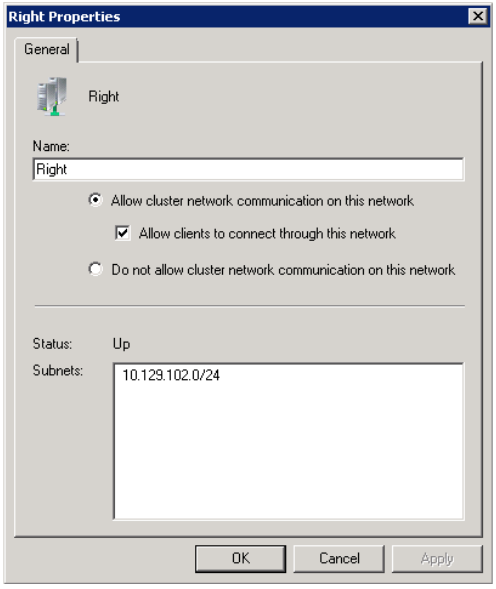
2. In the Server Manager list, open Features > Failover Cluster Manager > *cluster_name*.

3. Click Networks.

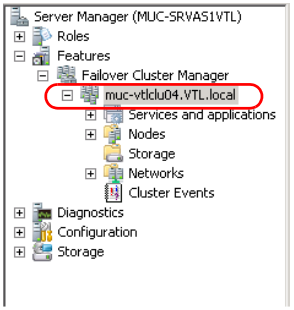
   Make sure that Cluster Use is enabled for both ISIS networks, as shown in the following illustration.



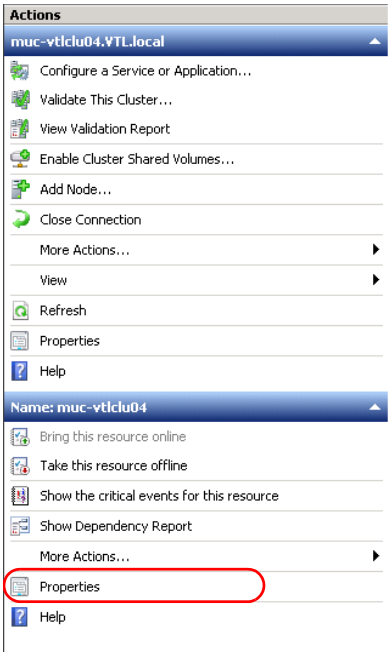
   If a network is not enabled, right-click the network, select Properties, and select “Allow clients to connect through this network.”



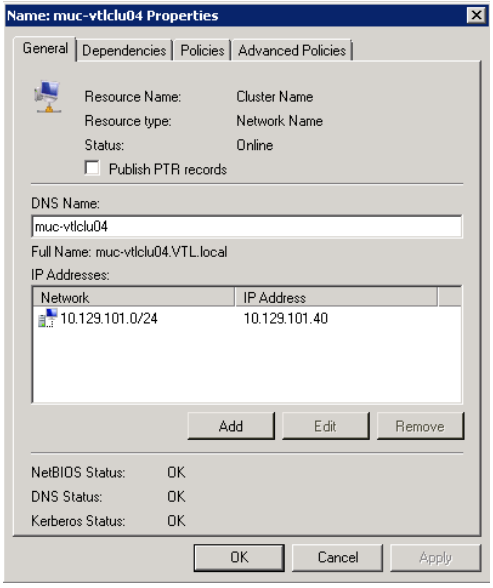
4. In the Failover Cluster Manager, select the cluster application by clicking on the Cluster name in the left column of the Failover Cluster Manager.



5. In the Actions panel (right column), select Properties in the Name section.



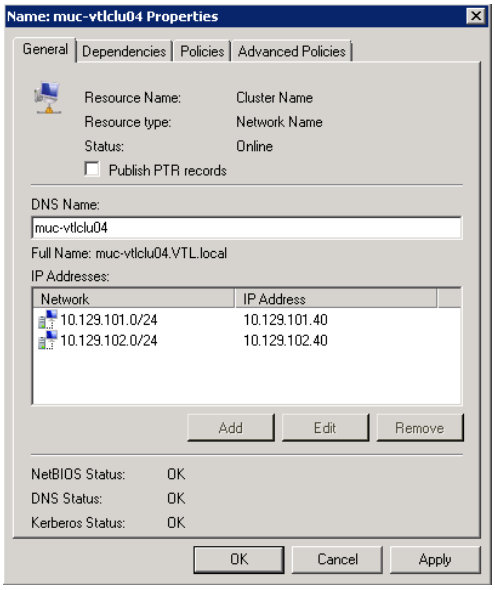
The Properties dialog box opens.



In the network column, if <unknown network> or <No Network> is displayed instead of the network identifier, close the Server Manager window, and after waiting a few seconds open it again.

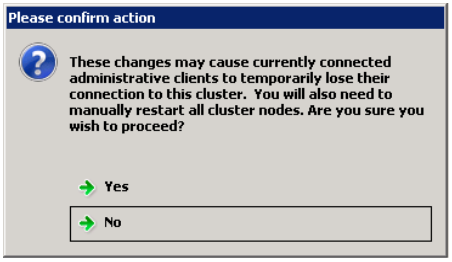
6. In the General tab, do the following:
   a. Click Add.
   b. Type the IP address for the other ISIS network.
   c. Click OK.

   The General tab shows the IP addresses for both ISIS networks.

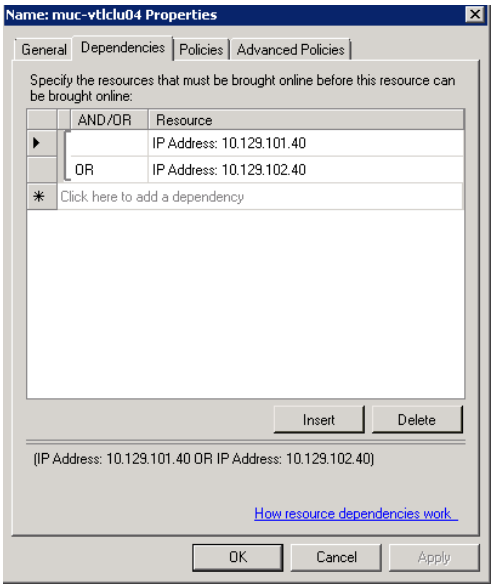


7. Click Apply.

   A confirmation box asks you to confirm that all cluster nodes need to be restarted. You will restart the nodes later in this procedure, so select Yes.


Please confirm action
These changes may cause currently connected administrative clients to temporarily lose their connection to this cluster. You will also need to manually restart all cluster nodes. Are you sure you wish to proceed?
Yes
No

8. Click the Dependencies tab and check if the new IP address was added with an OR conjunction.



   If the second IP address is not there, click “Click here to add a dependency.” Select “OR” from the list in the AND/OR column and select the new IP address from the list in the Resource column.

9. Click OK and restart both nodes. Start with node one and after it is back online, restart the other node.

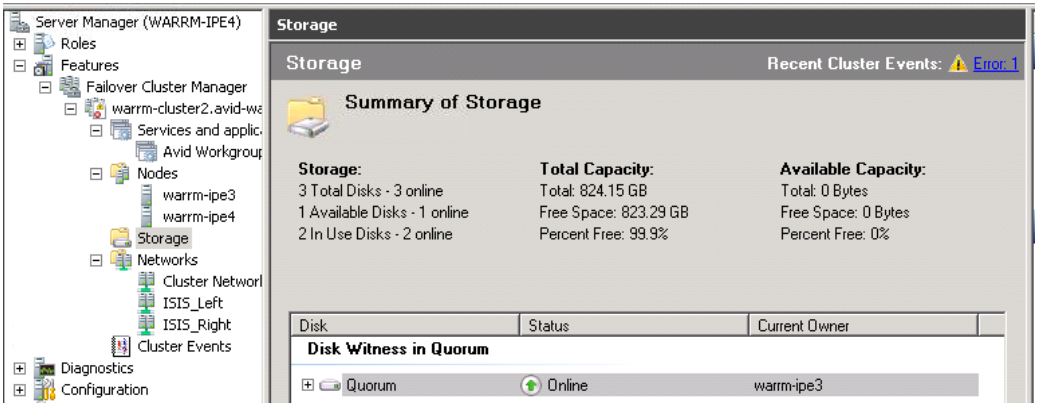
Testing the Cluster Installation

At this point, test the cluster installation to make sure the failover process is working.

To test the failover:

1. Make sure both nodes are running.
2. Determine which node is the active node (the node that owns the quorum disk). Open the Server Manager and select Features > Failover Cluster Manager > *cluster_name* > Storage. The server that owns the Quorum disk is the active node.

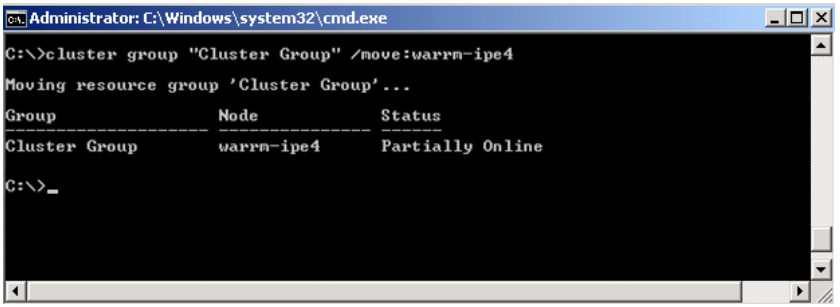
   In the following figure, warrm-ipe3 (node 1) is the current owner of the Quorum disk and is the active node.



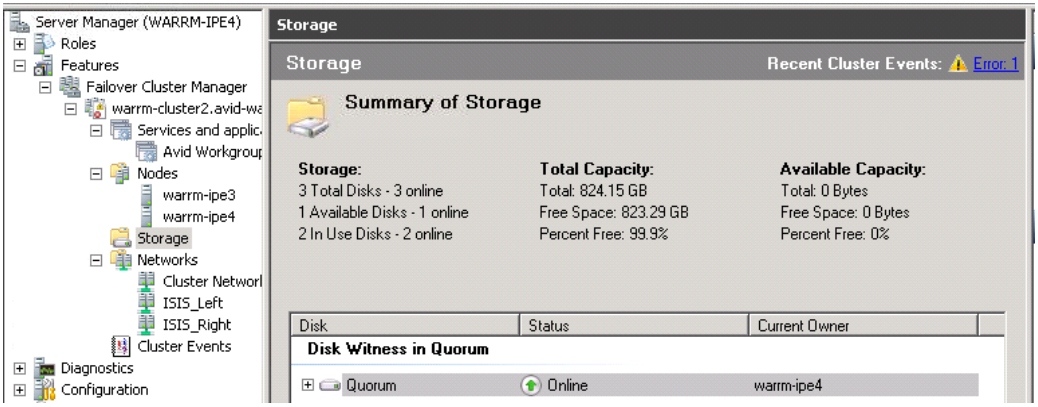
3. Open a Command Prompt and enter the following command:

   `cluster group "Cluster Group" /move:`*`node_hostname`*

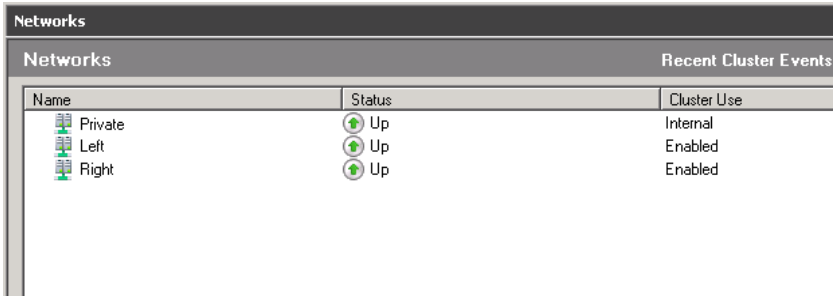
   This command moves the cluster group, including the Quorum disk, to the node you specify. To test the failover, use the hostname of the non-active node. The following illustration shows the command and result if the non-active node (node 2) is named warrm-ipe4. The status "Partially Online" is normal.



4. Open the Server Manager and select Features > Failover Cluster Manager > *cluster_name* > Storage. Make sure that the Quorum disk is online and that current owner is node 2, as shown in the following illustration.



5. In the Server Manager, select Features > Failover Cluster Manager > *cluster_name* > Networks. The status of all networks should be "Up." The following illustration shows networks for a dual-connected configuration.



6. Repeat the test by using the Command Prompt to move the cluster back to node 1.

Configuration of the cluster service on all nodes is complete and the cluster is fully operational. You can now install the Interplay Engine.

3 Installing the Interplay | Engine for a Failover Cluster

After you set up and configure the cluster, you need to install the Interplay Engine software on both nodes. The following topics describe installing the Interplay Engine and other final tasks:

- Disabling Any Web Servers
- Installing the Interplay | Engine on the First Node
- Installing the Interplay | Engine on the Second Node
- Bringing the Interplay | Engine Online
- Testing the Complete Installation
- Updating a Clustered Installation (Rolling Upgrade)
- Uninstalling the Interplay | Engine on a Clustered System

The tasks in this chapter do not require the domain administrator privileges that are required when creating the Microsoft cluster (see "Requirements for Domain User Accounts" on page 29).

Disabling Any Web Servers

The Interplay Engine uses an Apache web server that can only be registered as a service if no other web server (for example, IIS) is serving the port 80 (or 443). Stop and disable or uninstall any other http services before you start the installation of the server. You must perform this procedure on both nodes.

No action should be required, because the only web server installed at this point is the IIS and it should already be disabled in the server image (see "Windows Server Settings Included in Revision 4 and Later Images" on page 116).

Installing the Interplay | Engine on the First Node

The following sections provide procedures for installing the Interplay Engine on the first node. For a list of example entries, see “List of IP Addresses and Network Names” on page 31.

- “Preparation for Installing on the First Node” on page 75
- “Starting the Installation and Accepting the License Agreement” on page 78
- “Installing the Interplay | Engine Using Custom Mode” on page 78
- “Checking the Status of the Resource Group” on page 93
- “Creating the Database Share Manually” on page 95
- “Adding a Second IP Address (Dual-Connected Configuration)” on page 96

Shut down the second node while installing Interplay Engine for the first time.

Preparation for Installing on the First Node

You are ready to start installing the Interplay Engine on the first node. During setup you must enter the following cluster-related information:

- Virtual IP Address: the Interplay Engine service IP address of the resource group. For a list of example names, see “List of IP Addresses and Network Names” on page 31.
- Subnet Mask: the subnet mask on the local network.
- Public Network: the name of the public network connection.
  - For a redundant-switch ISIS configuration, type Public, or whatever name you assigned in “Renaming the Local Area Network Interface on Each Node” on page 39.
  - For a dual-connection ISIS configuration, type Left-*subnet* or whatever name you assigned in “Renaming the Cluster Networks in the Failover Cluster Manager” on page 61. For a dual-connection configuration, you set the other public network connection after the installation. See “Checking the Status of the Resource Group” on page 93.

  To check the public network connection on the first node, open the Networks view in the Failover Cluster Manager and look up the name there.
- Shared Drive: the letter for the shared drive that holds the database. Use S: for the shared drive letter. You need to make sure this drive is online. See “Bringing the Shared Database Drive Online” on page 76.
- Cluster Service Account User and Password (Server Execution User): the domain account that is used to run the cluster. See “Before You Begin the Server Failover Installation” on page 29.

Shut down the second node when installing Interplay Engine for the first time.

When installing the Interplay Engine for the first time on a machine with cluster services, you are asked to choose between clustered and regular installation. The installation on the second node (or later updates) reuses the configuration from the first installation without allowing you to change the cluster-specific settings. In other words, it is not possible to change the configuration settings without uninstalling the Interplay Engine.

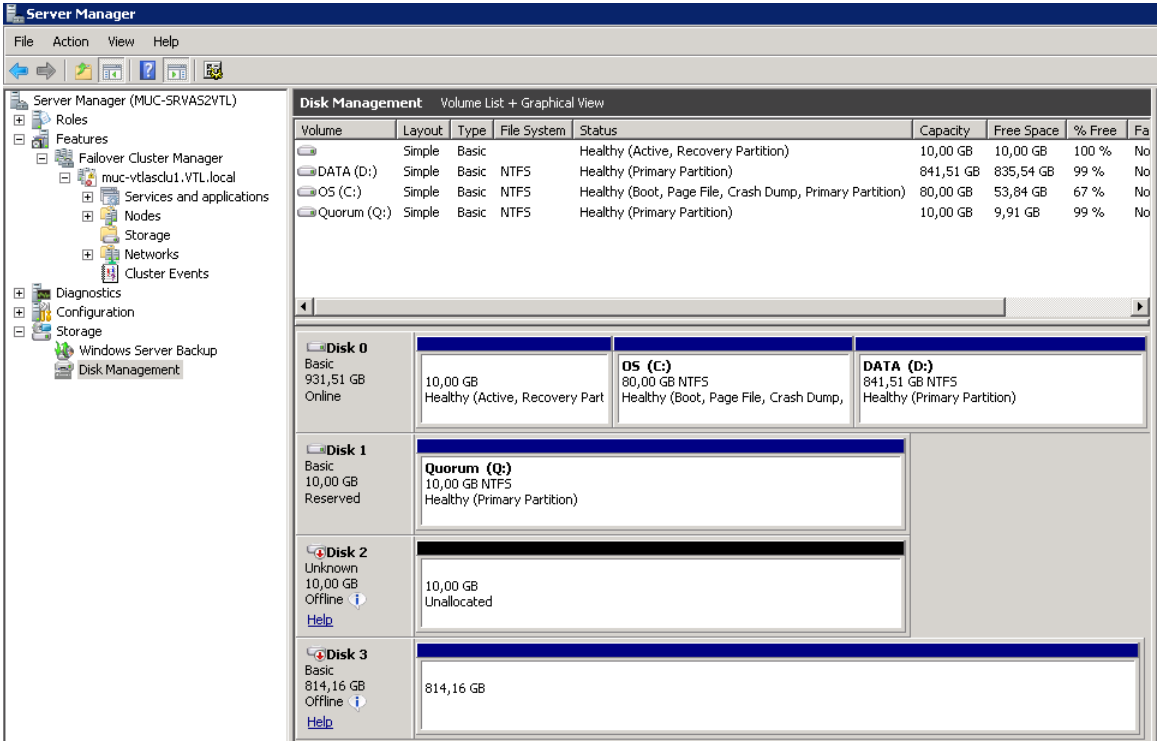
Bringing the Shared Database Drive Online

You need to make sure that the shared database drive (S:) is online.

To bring the shared database drive online:

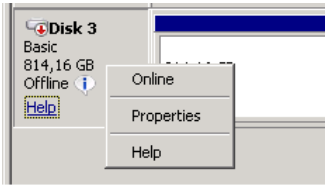
1. Shut down the second node.
2. Open the Disk Management tool in one of the following ways:
   - Right-click My Computer and select Manage. In the Server Manager list, select Storage > Disk Management.
   - Click Start, type Disk, and select “Create and format hard drive.”

   The Disk Management window opens. The following illustration shows the shared storage drives labeled Disk 1, Disk 2, and Disk 3. Disk 1 is online, Disk 2 is not formatted and is offline (not used), and Disk 3 is formatted but offline.

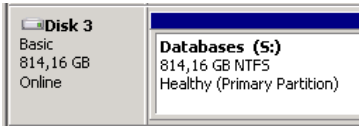


If Disk 3 is online, you can skip the following steps.

3. Right-click Disk 3 (in the left column) and select Online.



4. Make sure the drive letter is correct (S:) and the drive is named Databases. If not, you can change it here. Right-click the disk name and letter (right-column) and select Change Drive Letter or Path.



If you attempt to change the drive letter, you receive a warning tells you that some programs that rely on drive letters might not run correctly and asks if you want to continue. Click Yes.

Starting the Installation and Accepting the License Agreement

To start the installation:

1. Make sure the second node is shut down.
2. Insert the Avid Interplay Servers installation flash drive.

   A start screen opens.
3. Select the following from the Interplay Server Installer Main Menu:

   Servers > Avid Interplay Engine > Avid Interplay Engine

   The Welcome dialog box opens.
4. Close all Windows programs before proceeding with the installation.
5. Information about the installation of Apache is provided in the Welcome dialog box. Read the text and then click Next.

   The License Agreement dialog box opens.
6. Read the license agreement information and then accept the license agreement by selecting "I accept the agreement." Click Next.

   The Specify Installation Type dialog box opens.
7. Continue the installation as described in the next topic.

If you receive a message that the Avid Workgroup Name resource was not found, you need to check the registry. See "Changing the Resource Name of the Avid Workgroup Server" on page 102.

Installing the Interplay | Engine Using Custom Mode

The first time you install the Interplay Engine on a cluster system, you should use the Custom installation mode. This lets you specify all the available options for the installation. This is the recommended option to use.

The following procedures are used to perform a Custom installation of the Interplay Engine:

- "Specifying Cluster Mode During a Custom Installation" on page 79
- "Specifying the Interplay Engine Details" on page 80
- "Specifying the Interplay Engine Service Name" on page 82
- "Specifying the Destination Location" on page 83
- "Specifying the Default Database Folder" on page 84

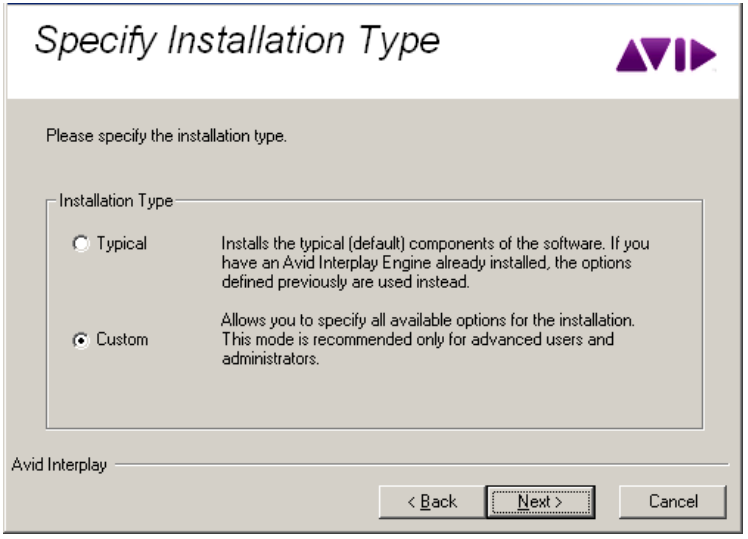
- “Specifying the Share Name” on page 85
- “Specifying the Configuration Server” on page 86
- “Specifying the Server User” on page 87
- “Specifying the Server Cache” on page 88
- “Enabling Email Notifications” on page 89
- “Installing the Interplay Engine for a Custom Installation on the First Node” on page 91

For information about updating the installation, see “Updating a Clustered Installation (Rolling Upgrade)” on page 110.

Specifying Cluster Mode During a Custom Installation

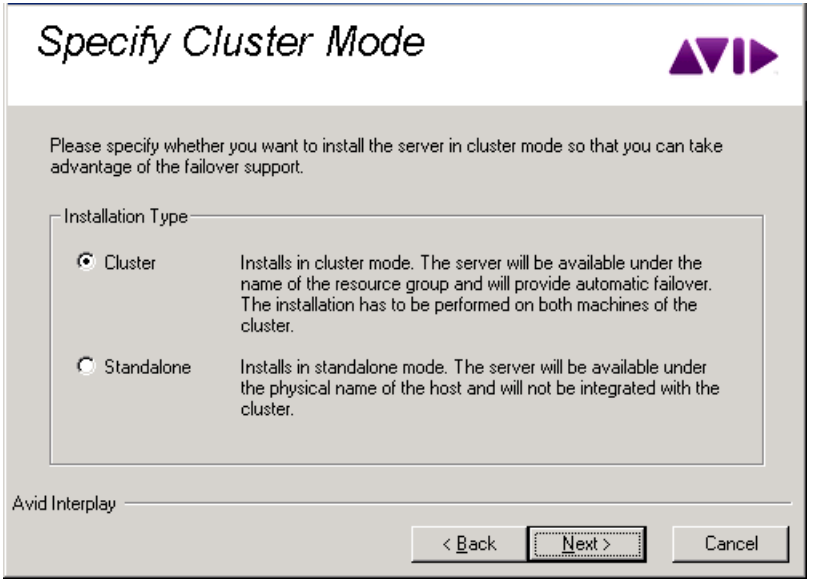
To specify cluster mode:

1. In the Specify Installation Type dialog box, select Custom.


Specify Installation Type
Please specify the installation type.
Installation Type
Typical
Installs the typical (default) components of the software. If you have an Avid Interplay Engine already installed, the options defined previously are used instead.
Custom
Allows you to specify all available options for the installation. This mode is recommended only for advanced users and administrators.
Avid Interplay
< Back
Next >
Cancel

2. Click Next.

   The Specify Cluster Mode dialog box opens.

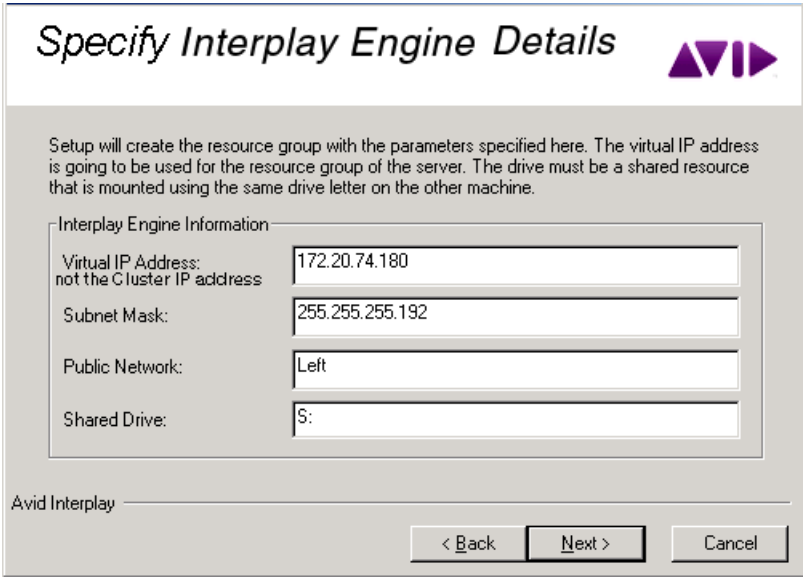

Specify Cluster Mode
Please specify whether you want to install the server in cluster mode so that you can take advantage of the failover support.
Installation Type
Cluster
Installs in cluster mode. The server will be available under the name of the resource group and will provide automatic failover. The installation has to be performed on both machines of the cluster.
Standalone
Installs in standalone mode. The server will be available under the physical name of the host and will not be integrated with the cluster.
Avid Interplay
< Back
Next >
Cancel

3. Select Cluster and click Next to continue the installation in cluster mode.

   The Specify Interplay Engine Details dialog box opens.

Specifying the Interplay Engine Details

In this dialog box, provide details about the Interplay Engine.


Specify Interplay Engine Details
Setup will create the resource group with the parameters specified here. The virtual IP address is going to be used for the resource group of the server. The drive must be a shared resource that is mounted using the same drive letter on the other machine.
Interplay Engine Information
Virtual IP Address: not the Cluster IP address
172.20.74.180
Subnet Mask:
255.255.255.192
Public Network:
Left
Shared Drive:
S:
Avid Interplay
< Back
Next >
Cancel

To specify the Interplay Engine details:

1. Type the following values:
   - Virtual IP address: This is the Interplay Engine service IP Address, *not* the Cluster service IP address. For a list of examples, see "List of IP Addresses and Network Names" on page 31.

     For a dual-connected configuration, you set the other public network connection after the installation. See "Adding a Second IP Address (Dual-Connected Configuration)" on page 96.
   - Subnet Mask: The subnet mask on the local network.
   - Public Network: For a redundant-switch ISIS configuration, type Public, or whatever name you assigned in "Renaming the Local Area Network Interface on Each Node" on page 39. For a dual-connected ISIS configuration, type the name of the public network on the first node, for example, Left, or whatever name you assigned in "Renaming the Cluster Networks in the Failover Cluster Manager" on page 61. This must be the cluster resource name.

     To check the name of the public network on the first node, open the Networks view in the Failover Cluster Manager and look up the name there.
   - Shared Drive: The letter of the shared drive that is used to store the database. Use S: for the shared drive letter.

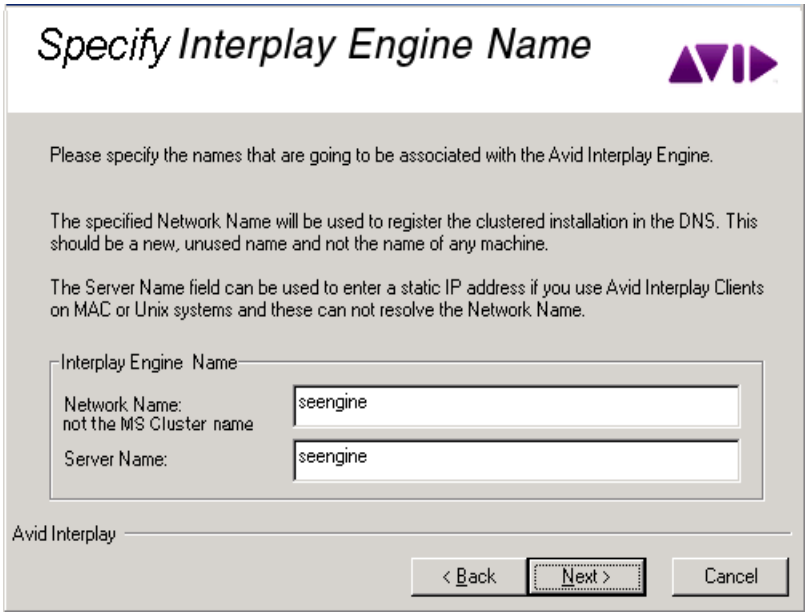
Make sure you type the correct information here, as this data cannot be changed afterwards. Should you require any changes to the above values later, you will need to uninstall the server on both nodes.

2. Click Next.

   The Specify Interplay Engine Name dialog box opens.

Specifying the Interplay Engine Service Name

In this dialog box, type the name of the Interplay Engine service.


Specify Interplay Engine Name
Please specify the names that are going to be associated with the Avid Interplay Engine.
The specified Network Name will be used to register the clustered installation in the DNS. This should be a new, unused name and not the name of any machine.
The Server Name field can be used to enter a static IP address if you use Avid Interplay Clients on MAC or Unix systems and these can not resolve the Network Name.
Interplay Engine Name
Network Name:
not the MS Cluster name
seengine
Server Name:
seengine
Avid Interplay
< Back
Next >
Cancel

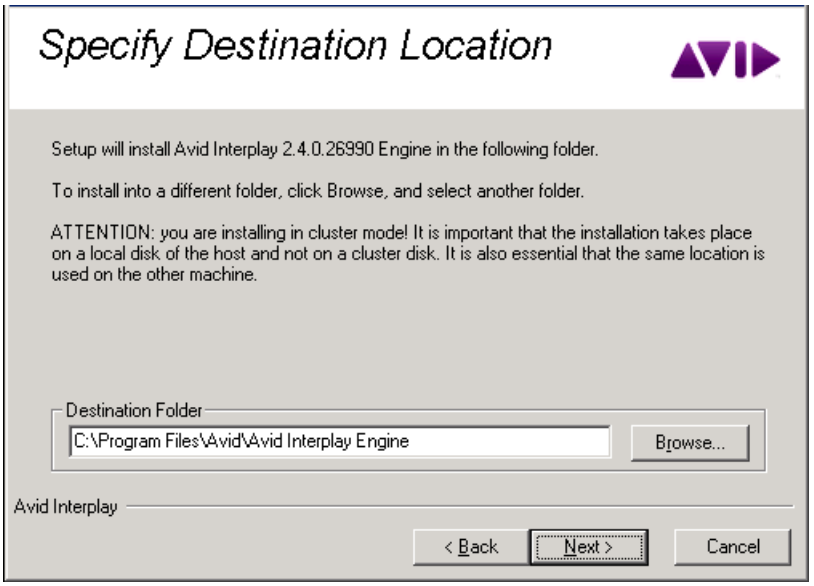
To specify the Interplay Engine name:

1. Specify the public names for the Avid Interplay Engine service by typing the following values:
   - The Network Name will be associated with the virtual IP Address that you entered in the previous Interplay Engine Details dialog box. This is the Interplay Engine service name (see "List of IP Addresses and Network Names" on page 31). It must be a new, unused name, and must be registered in the DNS so that clients can find the server without having to specify its address.
   - The Server Name is used by clients to identify the server. If you only use Avid Interplay Clients on Windows computers, you can use the Network Name as the server name. If you use several platforms as client systems, such as Macintosh® and Linux® you need to specify the static IP address that you entered for the resource group in the previous dialog box. Macintosh systems are not always able to map server names to IP addresses. If you type a static IP address, make sure this IP address is not provided by a DHCP server.
2. Click Next.

   The Specify Destination Location dialog box opens.

Specifying the Destination Location

In this dialog box specify the folder in which you want to install the Interplay Engine program files.


Specify Destination Location
Setup will install Avid Interplay 2.4.0.26990 Engine in the following folder.
To install into a different folder, click Browse, and select another folder.
ATTENTION: you are installing in cluster mode! It is important that the installation takes place on a local disk of the host and not on a cluster disk. It is also essential that the same location is used on the other machine.
Destination Folder
C:\Program Files\Avid\Avid Interplay Engine
Browse...
Avid Interplay
< Back
Next >
Cancel

To specify the destination location:

1. Avid recommends that you keep the default path C:\Program Files\Avid\Avid Interplay Engine.

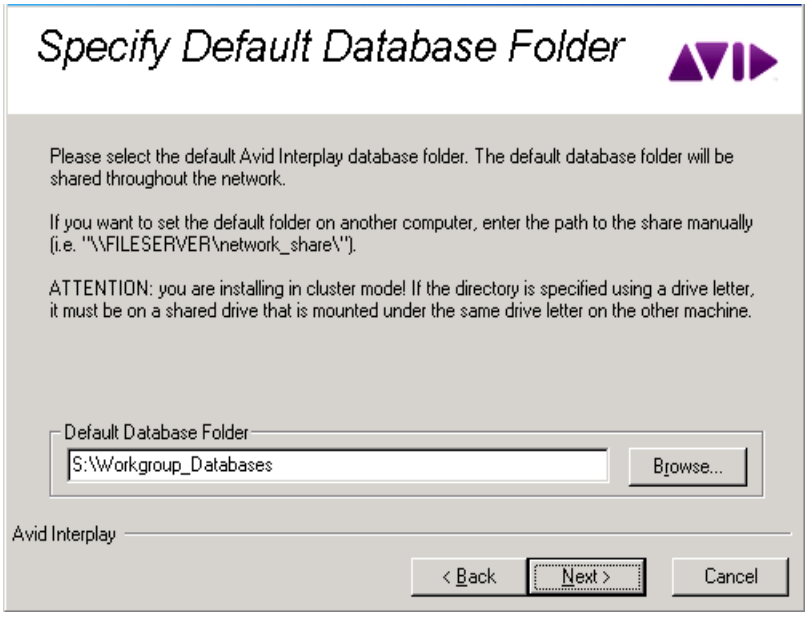
Under no circumstances attempt to install to a shared disk; independent installations are required on both nodes. This is because local changes are also necessary on both machines. Also, with independent installations you can use a rolling upgrade approach later, upgrading each node individually without affecting the operation of the cluster.

2. Click Next.

   The Specify Default Database Folder dialog box opens.

Specifying the Default Database Folder

In this dialog box specify the folder where the database data is stored.


Specify Default Database Folder
Please select the default Avid Interplay database folder. The default database folder will be shared throughout the network.
If you want to set the default folder on another computer, enter the path to the share manually (i.e. "\\FILESERVER\network_share\").
ATTENTION: you are installing in cluster mode! If the directory is specified using a drive letter, it must be on a shared drive that is mounted under the same drive letter on the other machine.
Default Database Folder
S:\Workgroup_Databases
Browse...
Avid Interplay
< Back
Next >
Cancel

To specify the default database folder:

1. Type S:\Workgroup_Databases. Make sure the path specifies the shared drive (S:).

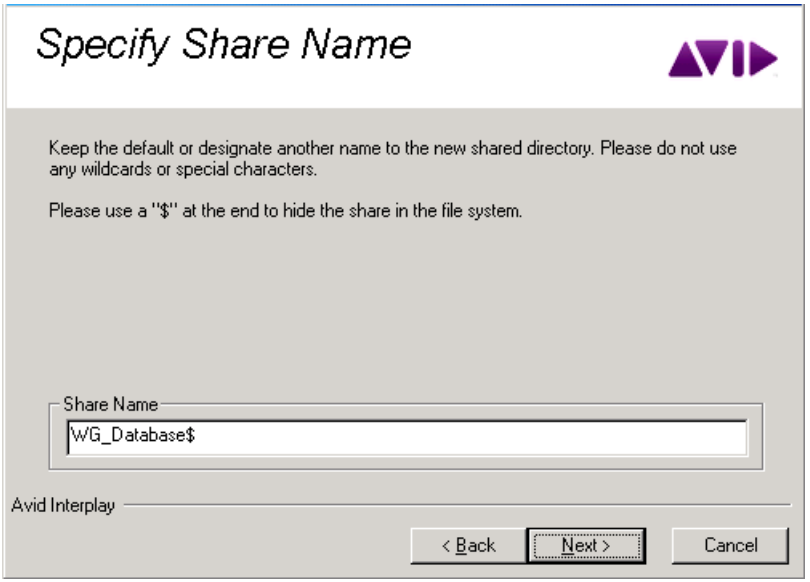
   This folder must reside on the shared drive that is owned by the resource group of the server. You must use this shared drive resource so that it can be monitored and managed by the cluster service. The drive must be assigned to the physical drive resource that is mounted under the same drive letter on the other machine.

2. Click Next.

   The Specify Share Name dialog box opens.

Specifying the Share Name

In this dialog box specify a share name to be used for the database folder.


Specify Share Name
Keep the default or designate another name to the new shared directory. Please do not use any wildcards or special characters.
Please use a "$" at the end to hide the share in the file system.
Share Name
WG_Database$
Avid Interplay
< Back
Next >
Cancel

To specify the share name:

1. Accept the default share name.

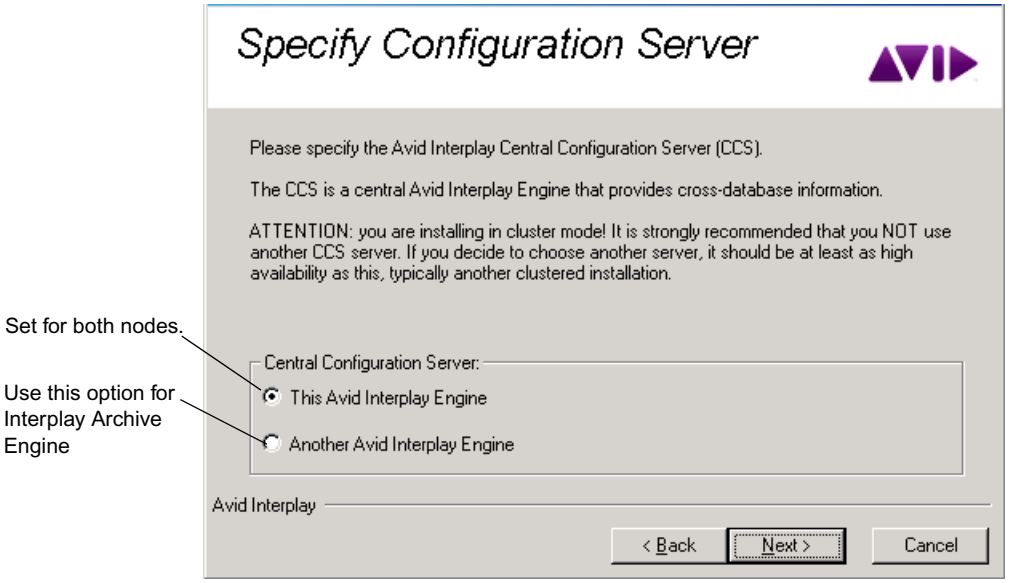
   Avid recommends you use the default share name WG_Database$. This name is visible on all client platforms, such as Windows NT Windows 2000 and Windows XP.The “$” at the end makes the share invisible if you browse through the network with the Windows Explorer. For security reasons, Avid recommends using a “$” at the end of the share name. If you use the default settings, the directory S:\Workgroup_Databases is accessible as \\InterplayEngine\WG_Database$.

2. Click Next.

   This step takes a few minutes. When finished the Specify Configuration Server dialog box opens.

Specifying the Configuration Server

In this dialog box, indicate whether this server is to act as a Central Configuration Server.


Specify Configuration Server
Please specify the Avid Interplay Central Configuration Server (CCS).
The CCS is a central Avid Interplay Engine that provides cross-database information.
ATTENTION: you are installing in cluster mode! It is strongly recommended that you NOT use another CCS server. If you decide to choose another server, it should be at least as high availability as this, typically another clustered installation.
Set for both nodes.
Use this option for Interplay Archive Engine
Central Configuration Server:
This Avid Interplay Engine
Another Avid Interplay Engine
Avid Interplay
< Back
Next >
Cancel

A Central Configuration Server (CCS) is an Avid Interplay Engine with a special module that is used to store server and database-spanning information. For more information, see the *Interplay | Engine and Interplay | Archive Engine Administration Guide*.

To specify the server to act as the CCS server:

1. Select either the server you are installing or a previously installed server to act as the Central Configuration Server.

   Typically you are working with only one server, so the appropriate choice is “This Avid Interplay Engine,” which is the default.

   If you need to specify a different server as the CCS (for example, if an Interplay Archive Engine is being used as the CCS), select “Another Avid Interplay Engine.” You need to type the name of the other server to be used as the CCS in the next dialog box.

Only use a CCS that is at least as high availability as this cluster installation, typically another clustered installation.

If you specify the wrong CCS, you can change the setting later on the server machine in the Windows Registry. See “Automatic Server Failover Tips and Rules” on page 114.

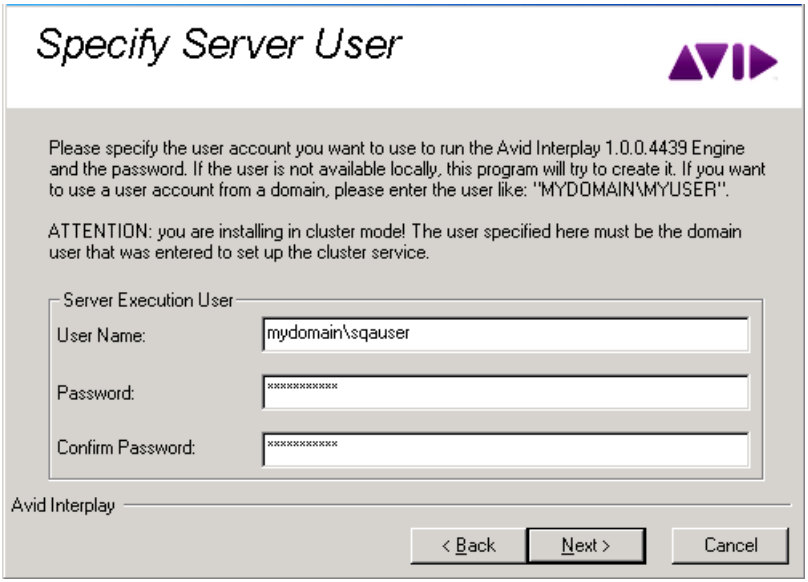
2. Click Next.

   The Specify Server User dialog box opens.

Specifying the Server User

In this dialog box, define the Cluster Service account (Server Execution User) used to run the Avid Interplay Engine.

The Server Execution User is the Windows domain user that runs the Interplay Engine and the cluster service. This account is automatically added to the Local Administrators group on the server. This account must be the one that was used to set up the cluster service. See “Before You Begin the Server Failover Installation” on page 29.


Specify Server User
Please specify the user account you want to use to run the Avid Interplay 1.0.0.4439 Engine and the password. If the user is not available locally, this program will try to create it. If you want to use a user account from a domain, please enter the user like: "MYDOMAIN\MYUSER".
ATTENTION: you are installing in cluster mode! The user specified here must be the domain user that was entered to set up the cluster service.
Server Execution User
User Name:
mydomain\sqauser
Password:
Confirm Password:
Avid Interplay
< Back
Next >
Cancel

To specify the Server Execution User:

1. Type the Cluster Service Account user login information.

The installer cannot check the username or password you type in this dialog. Make sure that the password is set correctly, or else you will need to uninstall the server and repeat the entire installation procedure. Avid does not recommend changing the Server Execution User in cluster mode afterwards, so choose carefully.

When typing the domain name do not use the full DNS name such as mydomain.company.com, because the DCOM part of the server will be unable to start. You should use the NetBIOS name, for example, mydomain.

2. Click Next.

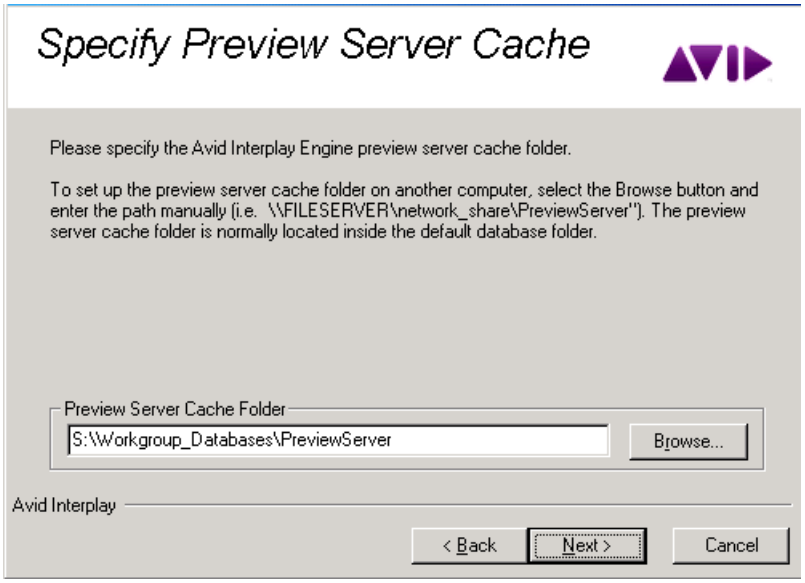
   The Specify Preview Server Cache dialog box opens.

If necessary, you can change the name of the Server Execution User after the installation. For more information, see “Troubleshooting the Server Execution User Account” and “Re-creating the Server Execution User” in the *Interplay | Engine and Interplay | Archive Engine Administration Guide* and the Interplay ReadMe.

Specifying the Server Cache

In this dialog box, specify the path for the cache folder.

For more information on the Preview Server cache and Preview Server configuration, see “Avid Workgroup Preview Server Service” in the Interplay | Engine and Interplay | Archive Engine Administration Guide.


Specify Preview Server Cache
Please specify the Avid Interplay Engine preview server cache folder.
To set up the preview server cache folder on another computer, select the Browse button and enter the path manually (i.e. \\FILESERVER\network_share\PreviewServer"). The preview server cache folder is normally located inside the default database folder.
Preview Server Cache Folder
S:\Workgroup_Databases\PreviewServer
Browse...
Avid Interplay
< Back
Next >
Cancel

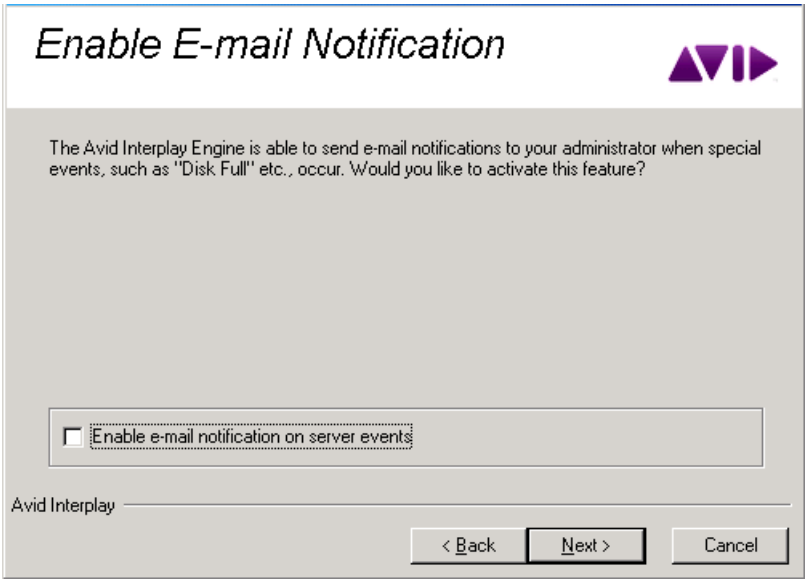
To specify the server cache folder:

1. Type or browse to the path of the server cache folder. Typically, the default path is used.
2. Click Next.

   The Enable Email Notification dialog box opens if you are installing the Avid Interplay Engine for the first time.

Enabling Email Notifications

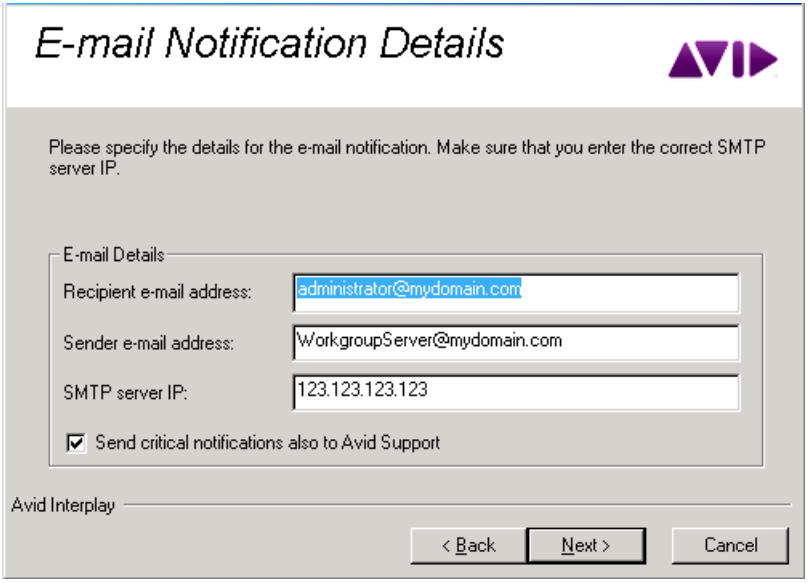
The first time you install the Avid Interplay Engine, the Enable Email Notification dialog box opens. The email notification feature sends emails to your administrator when special events, such as “Cluster Failure,” “Disk Full,” and “Out Of Memory” occur. Activate email notification if you want to receive emails on special events, server or cluster failures.


Enable E-mail Notification
The Avid Interplay Engine is able to send e-mail notifications to your administrator when special events, such as "Disk Full" etc., occur. Would you like to activate this feature?
Enable e-mail notification on server events
Avid Interplay
< Back
Next >
Cancel

To enable email notification:

1. (Option) Select Enable email notification on server events.

   The Email Notification Details dialog box opens.



2. Type the administrator's email address and the email address of the server, which is the sender.

   If an event, such as “Resource Failure” or “Disk Full” occurs on the server machine, the administrator receives an email from the sender's email account explaining the problem, so that the administrator can react to the problem. You also need to type the static IP address of your SMTP server. The notification feature needs the SMTP server in order to send emails. If you do not know this IP, ask your administrator.

3. If you also want to inform Avid Support automatically using email if problems arise, select “Send critical notifications also to Avid Support.”

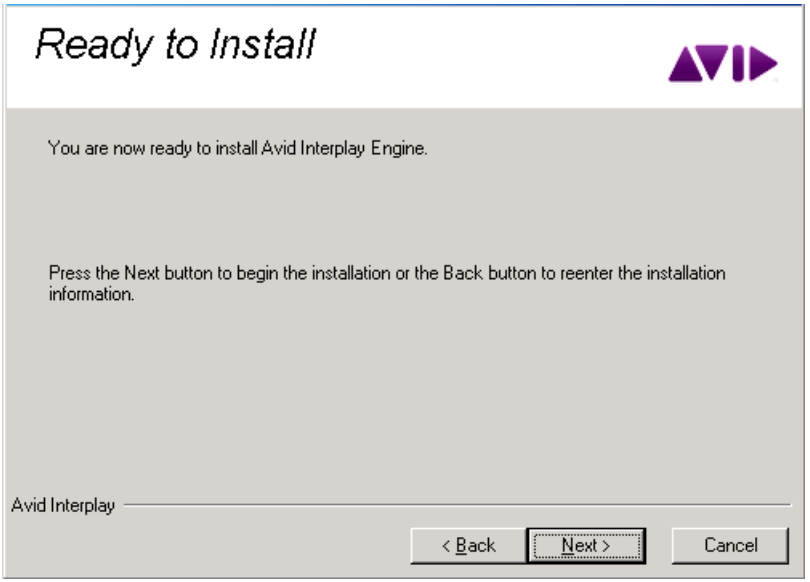
4. Click Next.

   The installer modifies the file Config.xml in the Workgroup_Data\Server\Config\Config directory with your settings. If you need to change these settings, edit Config.xml.

   The Ready to Install dialog box opens.

Installing the Interplay Engine for a Custom Installation on the First Node

In this dialog box, begin the installation of the engine software.


Ready to Install
You are now ready to install Avid Interplay Engine.
Press the Next button to begin the installation or the Back button to reenter the installation information.
Avid Interplay
< Back
Next >
Cancel

To install the Interplay Engine software:

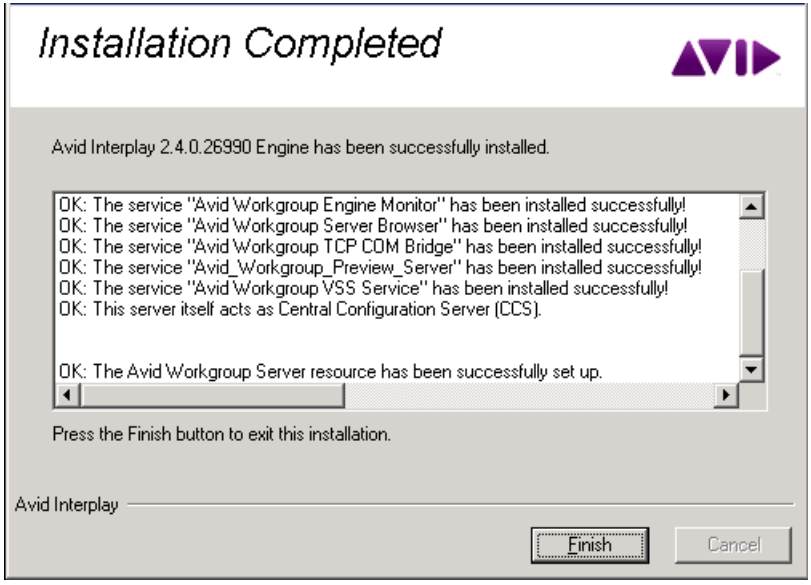
1. Click Next.

   Use the Back button to review or change the data you have entered. You can also terminate the installer using the Cancel button, because no changes have been done to the system yet.

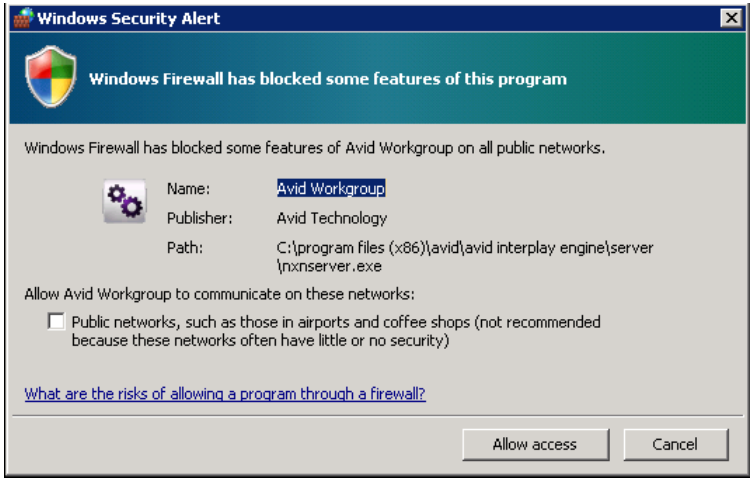
   The first time you install the software, a dialog box opens and asks if you want to install the Sentinel driver. This driver is used by the licensing system.

2. Click Continue.

   The Installation Completed dialog box opens after the installation is completed.


Installation Completed
Avid Interplay 2.4.0.26990 Engine has been successfully installed.
OK: The service "Avid Workgroup Engine Monitor" has been installed successfully!
OK: The service "Avid Workgroup Server Browser" has been installed successfully!
OK: The service "Avid Workgroup TCP COM Bridge" has been installed successfully!
OK: The service "Avid_Workgroup_Preview_Server" has been installed successfully!
OK: The service "Avid Workgroup VSS Service" has been installed successfully!
OK: This server itself acts as Central Configuration Server (CCS).
OK: The Avid Workgroup Server resource has been successfully set up.
Press the Finish button to exit this installation.
Avid Interplay
Finish
Cancel

The Windows Firewall is turned off by the server image (see “Windows Server Settings Included in Revision 4 and Later Images” on page 116). If the Firewall is turned on, you get messages that the Windows Firewall has blocked nxnserver.exe (the Interplay Engine) and the Apache server from public networks.


Windows Security Alert
Windows Firewall has blocked some features of this program
Windows Firewall has blocked some features of Avid Workgroup on all public networks.
Name: Avid Workgroup
Publisher: Avid Technology
Path: C:\program files (x86)\avid\avid interplay engine\server \nxnserver.exe
Allow Avid Workgroup to communicate on these networks:
Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)
What are the risks of allowing a program through a firewall?
Allow access
Cancel

If your customer wants to allow communication on public networks, click “Allow access” and select the check box for “Public networks, such as those in airports and coffee shops.”

3. Do one of the following:
   - Click Finish.
   - Analyze and resolve any issues or failures reported.
4. Click OK if prompted for a restart the system.

   The installation procedure requires the machine to restart (up to twice). For this reason it is very important that the other node is shut down, otherwise the current node loses ownership of the Avid Workgroup resource group. This applies to the installation on the first node only.

Subsequent installations should be run as described in "Updating a Clustered Installation (Rolling Upgrade)" on page 110 or in the Interplay | Production ReadMe.

Checking the Status of the Resource Group

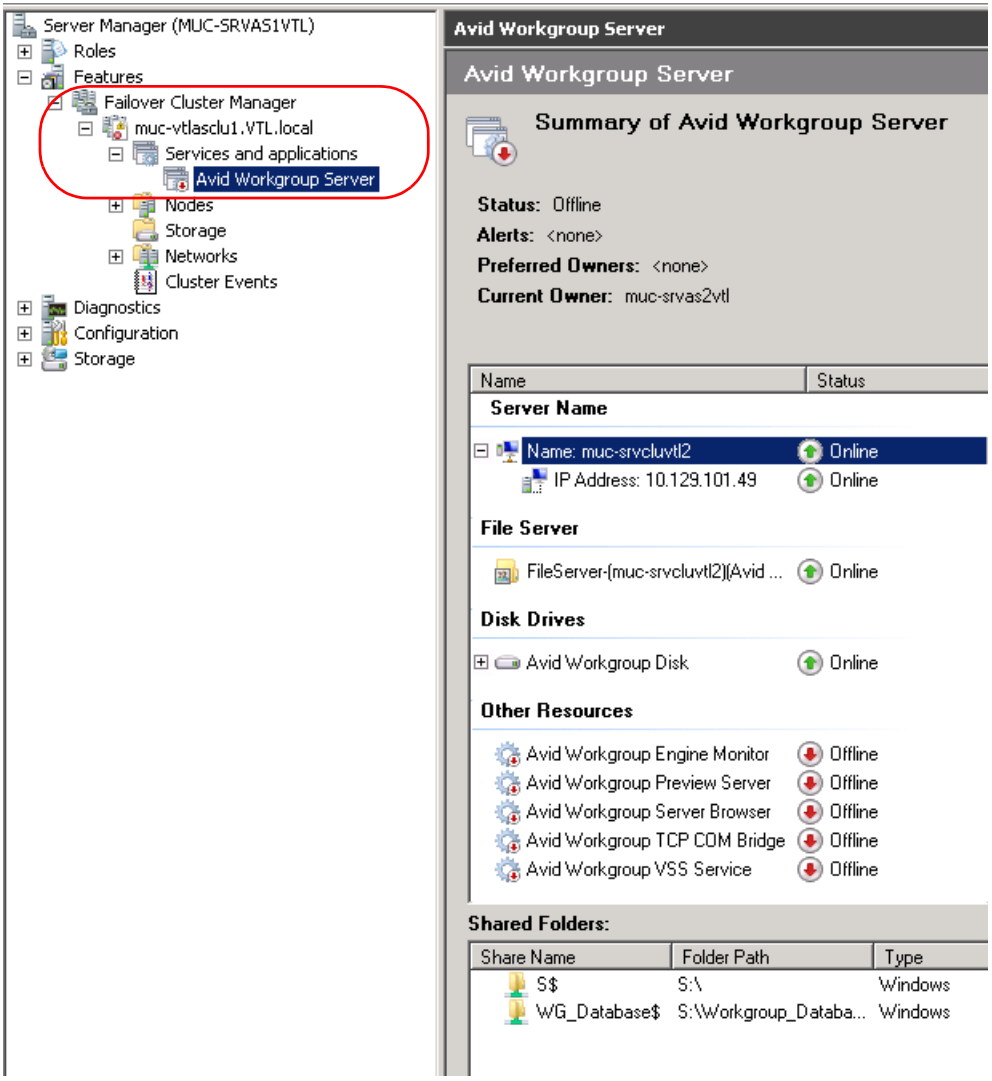
After installing the Interplay Engine, check the status of the resources in the Avid Workgroup Server resource group.

To check the status of the resource group:

1. After the installation is complete, right-click My Computer and select Manage.

   The Server Manager window opens.
2. In the Server Manager list, open Features and click Failover Cluster Manager.
3. Open the Avid Workgroup Server resource group.

   The list of resources should look similar to those in the following illustration.



The Server Name and IP Address, File Server, and Avid Workgroup Disk resources should be online and all other resources offline. S$ and WG_Database$ should be listed in the Shared Folders section.

Take one of the following steps:

- If the File Server resource or the shared folder WG_Database$ is missing, you must create it manually, as described in "Creating the Database Share Manually" on page 95.
- If you are setting up a redundant-switch configuration, leave this node running so that it maintains ownership of the resource group and proceed to "Installing the Interplay | Engine on the Second Node" on page 104.

- If you are setting up an Avid ISIS dual-connected configuration, proceed to "Adding a Second IP Address (Dual-Connected Configuration)" on page 96.

Avid does not recommend starting the server at this stage, because it is not installed on the other node and a failover would be impossible.

Creating the Database Share Manually

If the File Server resource or the database share (WG_Database$) is not created (see "Checking the Status of the Resource Group" on page 93), you can create it manually by using the following procedure.

If you copy the commands and paste them into a Command Prompt window, you must replace any line breaks with a blank space.

To create the database share and File Server resource manually:

1. In the Failover Cluster Manager, make sure that the "Avid Workgroup Disk" resource (the S: drive) is online.
2. Open a Command Prompt window.
3. To create the database share, enter the following command:

   ```
   net share WG_Database$=S:\Workgroup_Databases /UNLIMITED
   /GRANT:users,FULL /GRANT:Everyone,FULL /REMARK:"Avid Interplay database
   directory" /Y
   ```

   If the command is successful the following message is displayed:

   ```
   WG_Database$ was shared successfully.
   ```

4. Enter the following command. Substitute the virtual host name of the Interplay Engine service for `ENGINESERVER`.

   ```
   cluster res "FileServer-(ENGINESERVER)(Avid Workgroup Disk)" /priv
   MyShare="WG_Database$":str
   ```

   No message is displayed for a successful command.

5. Enter the following command. Again, substitute the virtual host name of the Interplay Engine service for `ENGINESERVER`.

   ```
   cluster res "Avid Workgroup Engine Monitor"
   /adddep:"FileServer-(ENGINESERVER)(Avid Workgroup Disk)"
   ```

   If the command is successful the following message is displayed:

   ```
   Making resource 'Avid Workgroup Engine Monitor' depend on resource
   'FileServer-(ENGINESERVER)(Avid Workgroup Disk)'...
   ```

6. Make sure the File Server resource and the database share (WG_Database$) are listed in the Failover Cluster Manager (see "Checking the Status of the Resource Group" on page 93).

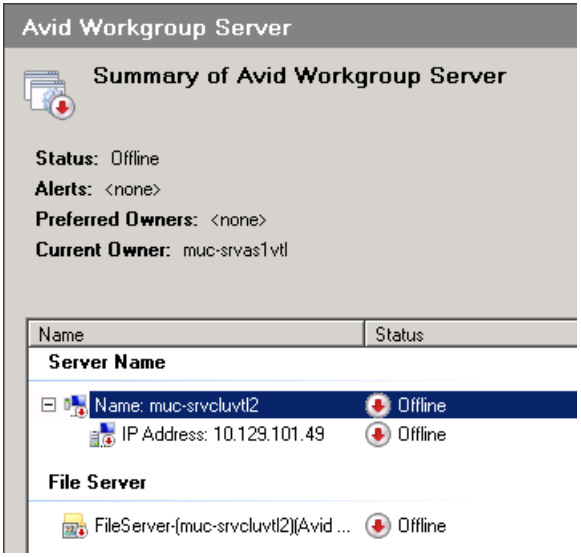
Adding a Second IP Address (Dual-Connected Configuration)

If you are setting up an Avid ISIS dual-connected configuration, you need use the Failover Cluster Manager to add a second IP address.

To add a second IP address:

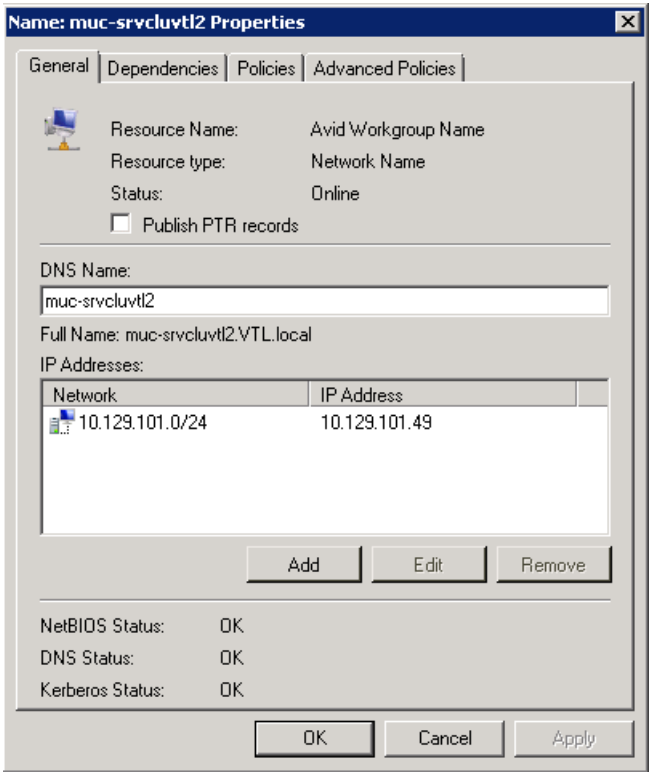
1. In the Failover Cluster Manager, select Avid Workgroup Server.
2. Bring the Name, IP Address, and File Server resources offline by doing one of the following:
   - Right-click the resource and select “Take this resource offline.”
   - Select all resources and select “Take this resource offline” in the Actions panel of the Server Manager window.

   The following illustration shows the resources offline.



3. Right-click the Name resource and select Properties.

   The Properties dialog box opens.

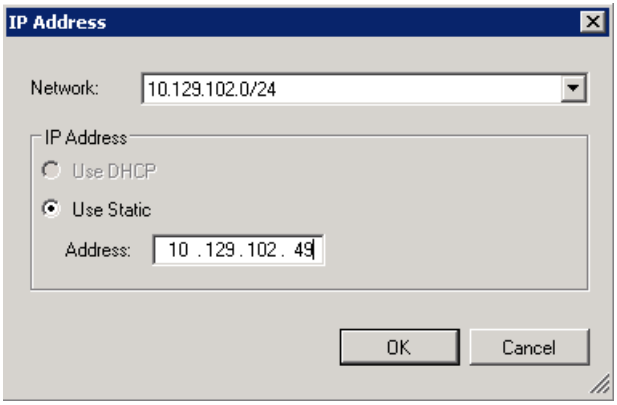


Note that the Resource Name is listed as "Avid Workgroup Name." Make sure to check the Resource Name after adding the second IP address and bringing the resources on line in step 9.

If the Kerberos Status is offline, you can continue with the procedure. After bringing the server online, the Kerberos Status should be OK.

4. Click the Add button below the IP Addresses list.

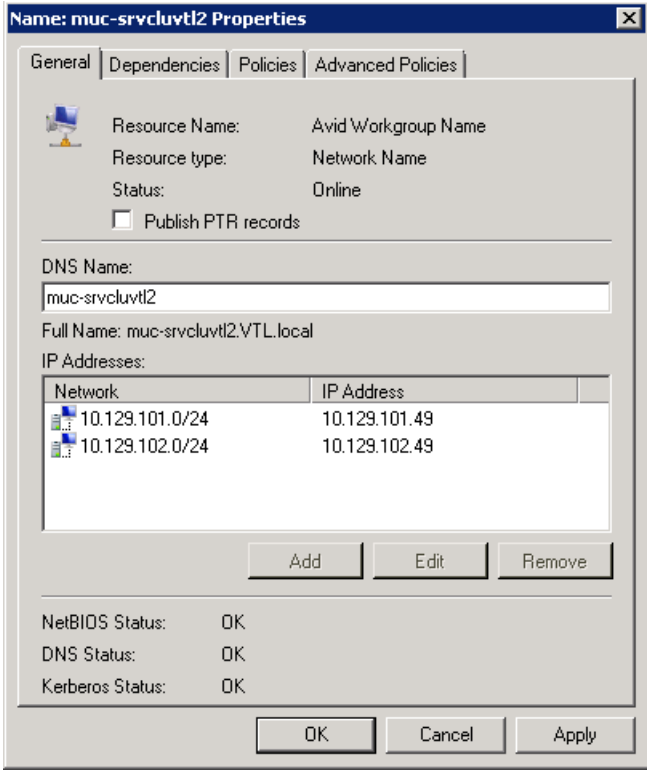
   The IP Address dialog box opens.



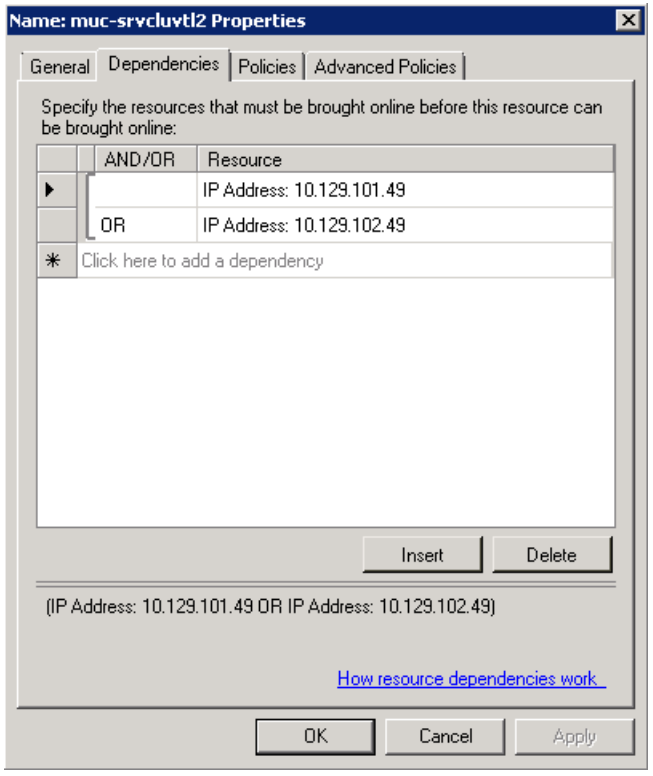
The second ISIS sub-network and a static IP Address are already displayed.

5. Type the second Interplay Engine service Avid ISIS IP address. See “List of IP Addresses and Network Names” on page 31. Click OK.

   The Properties dialog box is displayed with two networks and two IP addresses.

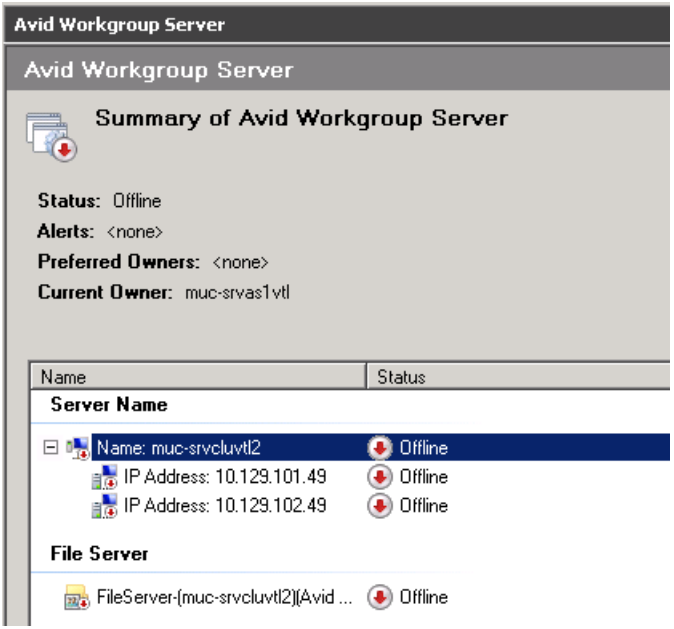


6. Check that you entered the IP address correctly, then click Apply.
7. Click the Dependencies tab and check that the second IP address was added, with an OR in the AND/OR column.



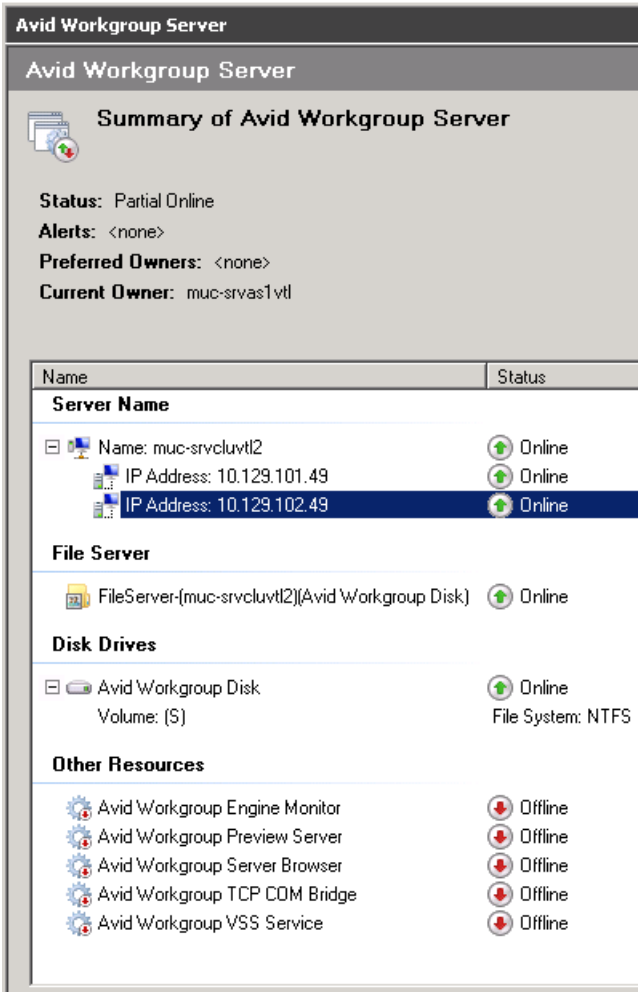
8. Click OK.

   The resources screen should look similar to the following illustration.

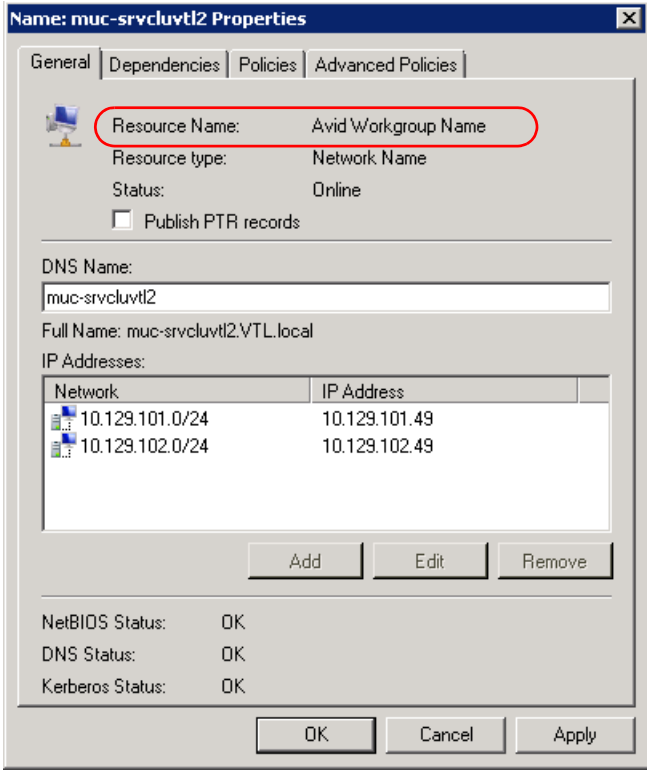


9. Bring the Name, both IP addresses, and the File Server resource online by doing one of the following:
   - Right-click the resource and select “Bring this resource online.”
   - Select the resources and select “Bring this resource online” in the Actions panel.

The following illustration shows the resources online.



10. Right-click the Name resource and select Properties.



The Resource Name must be listed as "Avid Workgroup Name." If it is not, see "Changing the Resource Name of the Avid Workgroup Server" on page 102.

11. Leave this node running so that it maintains ownership of the resource group and proceed to "Installing the Interplay | Engine on the Second Node" on page 104.

Changing the Resource Name of the Avid Workgroup Server

If you find that the resource name of the Avid Workgroup Server application is not "Avid Workgroup Name" (as displayed in the properties for the Server Name), you need to change the name in the Windows registry.

To change the resource name of the Avid Workgroup Server:

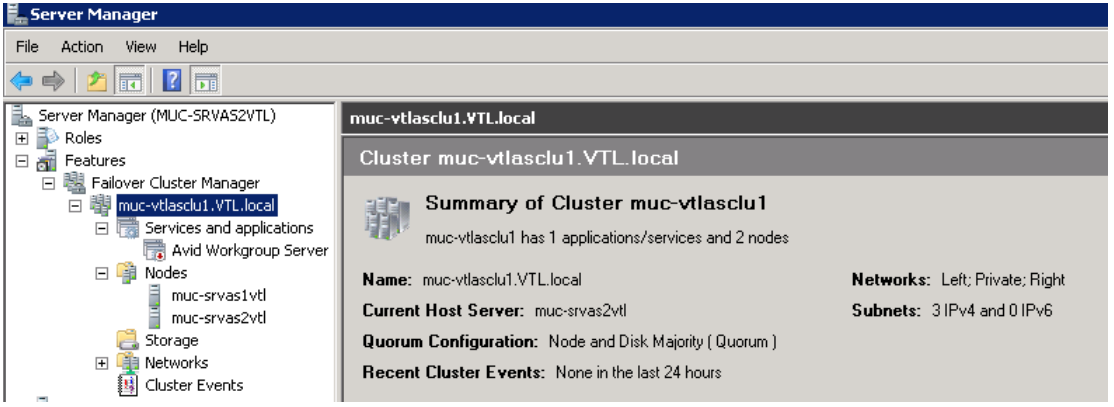
1. On the node hosting the Avid Workgroup Server (the active node), open the registry editor and navigate to the key HKEY_LOCAL_MACHINE\Cluster\Resources.

If you are installing a dual-connected cluster, make sure to edit the "Cluster" key. Do not edit other keys that include the word "Cluster," such as the "0.Cluster" key.

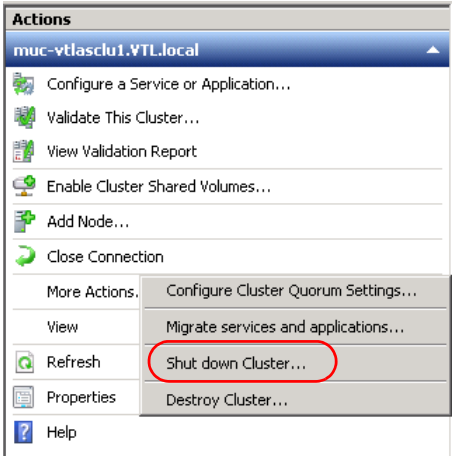
2. Browse through the GUID named subkeys looking for the one subkey where the value “Type” is set to “Network Name” and the value “Name” is set to <*incorrect_name*>.
3. Change the value “Name” to “Avid Workgroup Name.”
4. Do the following to shut down the cluster:

Make sure you have edited the registry entry before you shut down the cluster.

a. In the Server Manager tree (left panel) select the cluster. In the following example, the cluster name is muc-vtlasclu1.VTL.local.



b. In the context menu or the Actions panel on the right side, select “More Actions > Shutdown Cluster.”



5. Do the following to bring the cluster on line:
   a. In the Server Manager tree (left panel) select the cluster.
   b. In the context menu or the Actions panel on the right side, select “Start Cluster Service.”

Installing the Interplay | Engine on the Second Node

To install the Interplay Engine on the second node:

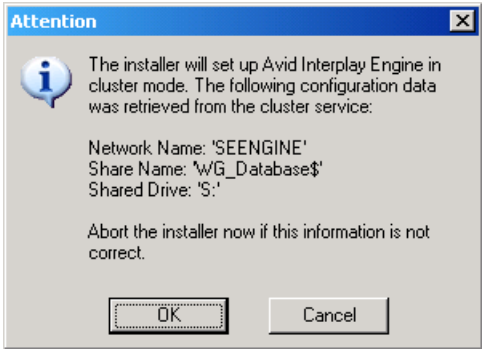
1. Leave the first machine running so that it maintains ownership of the resource group and start the second node.

Do not attempt to move the resource group over to the second node, or similarly, do not shut down the first node while the second is up, before the installation is completed on the second node.

Do not attempt to initiate a failover before installation is completed on the second node and you create an Interplay database. See “Testing the Complete Installation” on page 108.

2. Perform the installation procedure for the second node as described in “Installing the Interplay | Engine on the First Node” on page 75. In contrast to the installation on the first node, the installer automatically detects all settings previously entered on the first node.

   The Attention dialog box opens.


Attention
The installer will set up Avid Interplay Engine in cluster mode. The following configuration data was retrieved from the cluster service:
Network Name: 'SEENGINE'
Share Name: 'WG_Database$'
Shared Drive: 'S:'
Abort the installer now if this information is not correct.
OK
Cancel

3. Click OK.
4. The same installation dialog boxes will open that you saw before, except for the cluster related settings that only need to be entered once. Enter the requested information and allow the installation to proceed.

Make sure you use the installation mode that you used for the first node and enter the same information throughout the installer. Using different values results in a corrupted installation.

5. The installation procedure requires the machine to restart (up to twice). Allow the restart as requested.

If you receive a message that the Avid Workgroup Name resource was not found, you need to check the registry. See "Changing the Resource Name of the Avid Workgroup Server" on page 102.

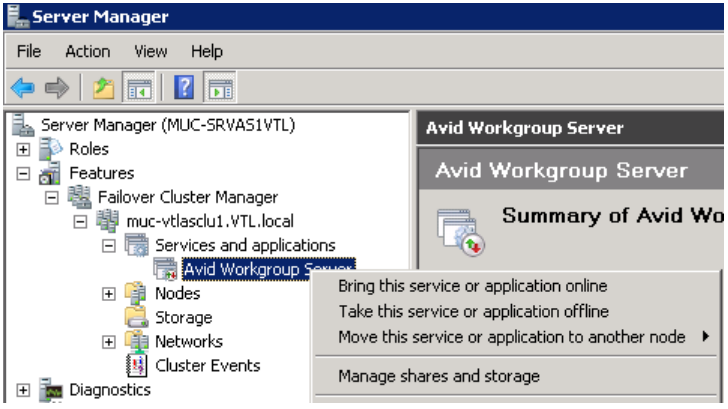
Bringing the Interplay | Engine Online

To bring the Interplay Engine online:

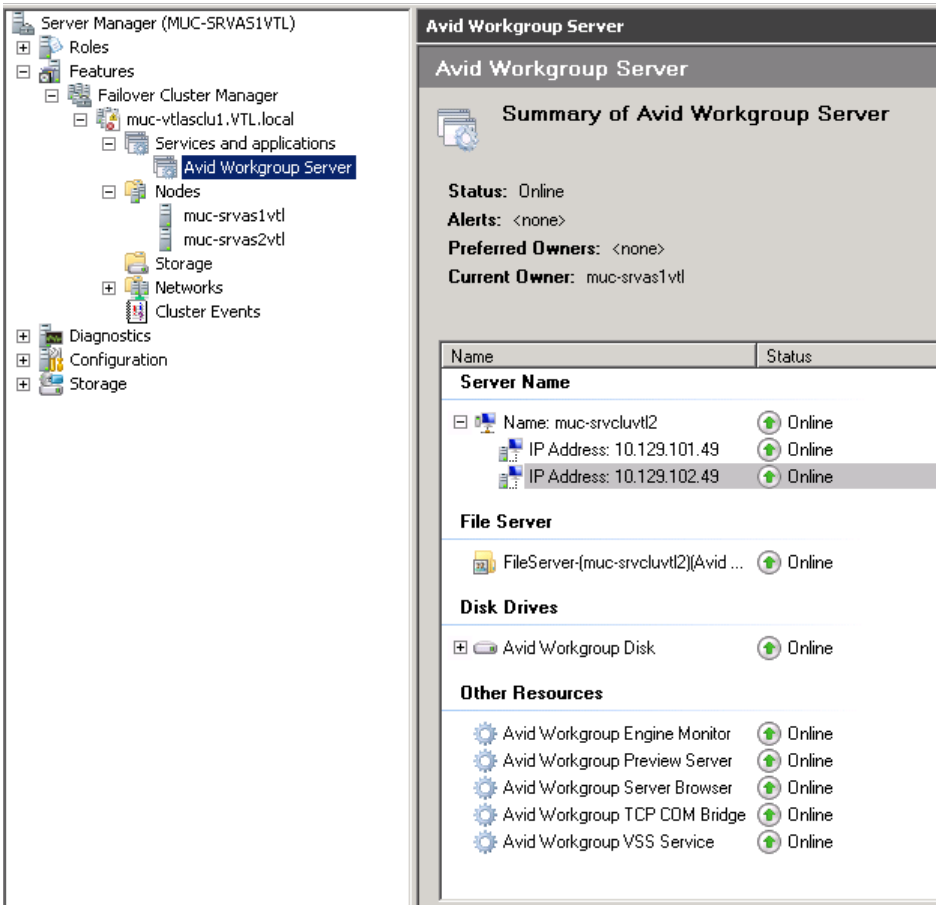
1. Right-click My Computer and select Manage.

   The Server Manager window opens.

2. In the Server Manager list, open Features and click Failover Cluster Manager.
3. In the Server Manager tree, right-click Avid Workgroup Server and select "Bring this service or application online."



All resources are now online, as shown in the following illustration.



After Installing the Interplay | Engine

After you install the Interplay Engine, install the following applications on both nodes:

- Interplay Access: From the Interplay Server Installer Main Menu, select Servers > Avid Interplay Engine > Avid Interplay Access.
- Avid ISIS client: See the *Avid ISIS System Setup Guide*.

If you cannot log in or connect to the Interplay Engine, make sure the database share WG_Database$ exists. You might get the following error message when you try to log in: "The network name cannot be found (0x80070043)." For more information, see *"Creating the Database Share Manually" on page 95*.

Then create an Interplay database, as described in "Creating an Interplay | Production Database" on page 107.

Creating an Interplay | Production Database

Before testing the failover cluster, you need to create a database. The following procedure describes basic information about creating a database. For complete information, see the *Interplay | Engine and Interplay | Archive Engine Administration Guide*.

To create an Interplay database:

1. Start the Interplay Administrator and log in.
2. In the Database section of the Interplay Administrator window, click the Create Database icon.

   The Create Database view opens.
3. In the New Database Information area, leave the default "AvidWG" in the Database Name text box. For an archive database, leave the default "AvidAM." These are the only two supported database names.
4. Type a description for the database in the Description text box, such as "Main Production Server."
5. Select "Create default Avid Interplay structure."

   After the database is created, a set of default folders within the database are visible in Interplay Access and other Interplay clients. For more information about these folders, see the *Interplay | Access User's Guide*.
6. Keep the root folder for the New Database Location (Meta Data).

   The metadata database must reside on the Interplay Engine server.
7. Keep the root folder for the New Data Location (Assets).

   If you are creating a split database, this entry should show the Avid shared-storage workspace that you set in the Server Settings view. For more information, see the *Interplay | Engine and Interplay | Archive Engine Administration Guide*.
8. Click Create to create directories and files for the database.

   The Interplay database is created.

Testing the Complete Installation

After you complete all the previously described steps, you are now ready to test the installation. Make yourself familiar with the Failover Cluster Manager and review the different failover-related settings.

If you want to test the Microsoft cluster failover process again, see "Testing the Cluster Installation" on page 71.

To test the complete installation:

1. Bring the Interplay Engine online, as described in "Bringing the Interplay | Engine Online" on page 105.
2. Make sure you created a database (see "Creating an Interplay | Production Database" on page 107).

   You can use the default license for testing. Then install the permanent licenses, as described in "Installing a Permanent License" on page 109
3. Start Interplay Access and add some files to the database.
4. Start the second node, if it is not already running.
5. Initiate a failover by right-clicking Avid Workgroup Server and moving it to another node by selecting "Move this server or application to another node."

   After the move is complete, all resources should remain online and the target node should be the current owner.

   You can also simulate a failure by right-clicking a resource and selecting More Actions > Simulate failure of this resource.

A failure of a resource does not necessarily initiate failover of the complete Avid Workgroup Server application.

6. You might also want to experiment by terminating the Interplay Engine manually using the Windows Task Manager (NxNServer.exe). This is also a good way to get familiar with the failover settings which can be found in the Properties dialog box of the Avid Workgroup Server and on the Policies tab in the Properties dialog box of the individual resources.
7. Look at the related settings of the Avid Workgroup Server. If you need to change any configuration files, make sure that the Avid Workgroup Disk resource is online; the configuration files can be found on the resource drive in the Workgroup_Data folder.

Installing a Permanent License

During Interplay Engine installation a temporary license for one user is activated automatically so that you can administer and install the system. There is no time limit for this license. A permanent license is provided by Avid in the form of a file (*.nxn), usually on a USB flash drive.

A license for an Interplay Engine failover cluster includes two hardware IDs. You install this license through the Interplay Administrator.

For more information on managing licenses, see the *Interplay | Engine and Interplay | Archive Engine Administration Guide*.

To install a permanent license:

1. Start and log in to the Interplay Administrator.
2. Make a folder for the license file on the root directory (C:\) of the Interplay Engine server or another server. For example:

   C:\Interplay_Licenses
3. Insert the USB flash drive into any USB port.

You can access the license file from the USB flash drive. The advantage of copying the license file to a server is that you have easy access to installer files if you should ever need them in the future.

   If the USB flash drive does not automatically display:

   a. Double-click the computer icon on the desktop.

   b. Double-click the USB flash drive icon to open it.
4. Copy the license file (*.nxn) into the new folder you created.
5. In the Server section of the Interplay Administrator window, click the Licenses icon.
6. Click the Import license button.
7. Browse for the *.nxn file.
8. Select the file and click Open.

   You see information about the permanent license in the License Types area.

Updating a Clustered Installation (Rolling Upgrade)

A major benefit of a clustered installation is that you can perform “rolling upgrades.” You can keep a node in production while updating the installation on the other, then move the resource over and update the second node as well.

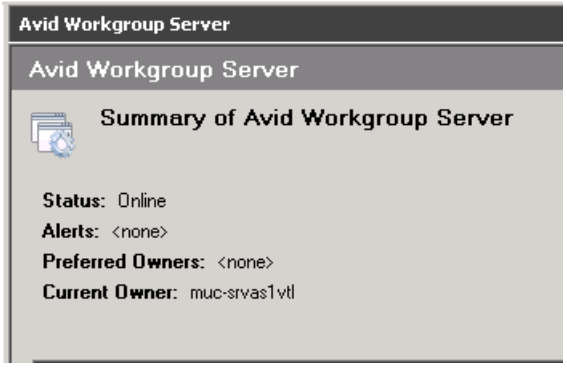
For information about updating specific versions of the Interplay Engine and a cluster, see the Avid Interplay ReadMe*. The ReadMe describes an alternative method of updating a cluster, in which you lock and deactivate the database before you begin the update.*

When updating a clustered installation, the settings that were entered to set up the cluster resources cannot be changed. Additionally, all other values must be reused, so Avid strongly recommends choosing the Typical installation mode. Changes to the fundamental attributes can only be achieved by uninstalling both nodes first and installing again with the new settings.

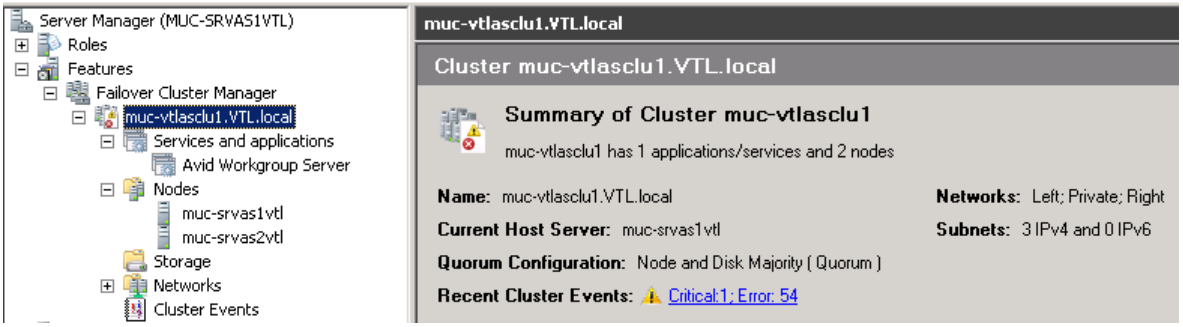
Make sure you follow the procedure in this order, otherwise you might end up with a corrupted installation.

To update a cluster:

1. On either node, determine which node is active:
   a. Right-click My Computer and select Manage. The Server Manager window opens.
   b. In the Server Manager list, open Features and click Failover Cluster Manager.
   c. In the Summary panel, check the name of the Current Owner.



   Consider this the active node or the first node.
2. Make sure this node is also the current host of the cluster. You can check the owner of cluster by selecting the cluster in the Server Management tree and checking the Current Host Server in the Summary panel.



3. If the current host of the cluster is not the active node, you need to stop the cluster service of the non-active node, which moves it to the active node.
   a. In the Server Manager tree, right-click the node that you want to go offline and select More Actions > Stop Cluster Service.
   b. After the Cluster Service has stopped, right-click the node for which you just stopped the cluster service and select More Actions > Start Cluster Service.
4. Run the Interplay Engine installer to update the installation on the non-active node (second node). Select Typical mode to reuse values set during the previous installation on that node. Restart as requested and continue with Part 2 of the installation. The installer will ask you to restart again after Part 2.

Do not move the Avid Workgroup Server to the second node yet.

5. Make sure that first node is active. Run the Interplay Engine installer to update the installation on the first node. Select Typical mode so that all values are reused.
6. During the installation, the installer displays a dialog box that tells you that the engine will be taken offline now in order to update cluster resources. Click OK and the installer will take the Engine offline and will update the cluster resources.
7. The installer displays a dialog box that asks you to move the Avid Workgroup Server to the second node. Move the application, then click OK in the installation dialog box to continue. Restart as requested and continue with Part 2 of the installation. The installer will ask you to restart again after Part 2.
8. After you move the application, bring the Interplay Engine online by right-clicking the Avid Workgroup Server and selecting “Bring this server or application online.”
9. You might want to test the final result of the update by moving the server back to the first node. The Interplay Administrator can be used to display the version of the server.

After completing the above steps, your entire clustered installation is updated to the new version. Should you encounter any complications or face a specialized situation, contact Avid Support as instructed in “If You Need Help” on page 10.

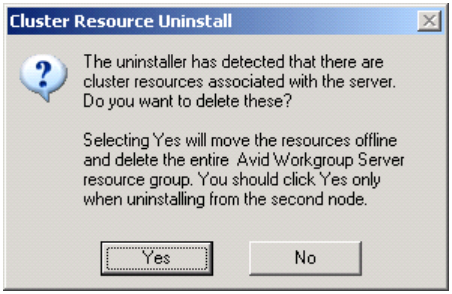
Uninstalling the Interplay | Engine on a Clustered System

To uninstall the Avid Interplay Engine, use the Avid Interplay Engine uninstaller, first on the inactive node, then on the active node.

The uninstall mechanism of the cluster resources only functions properly if the names of the resources or the resource groups are not changed. Never change these names.

To uninstall the Interplay Engine:

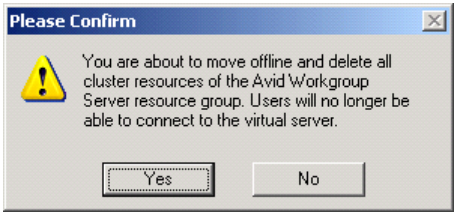
1. If you plan to reinstall the Interplay Engine and reuse the existing database, create a complete backup of the AvidWG database and the _InternalData database in S:\Workgroup_Databases. For information about creating a backup, see “Creating and Restoring Database Backups” in the *Interplay | Engine and Interplay | Archive Engine Administration Guide*.
2. (Dual-connected configuration only) Remove the second network address within the Avid Workgroup Server group.
   a. In the Cluster Administrator, right-click Avid Workgroup Server.
   b. Right-click Avid Workgroup Address 2 and select Remove.
3. Make sure that both nodes are running before you start the uninstaller.
4. On the inactive node (the node that does not own the Avid Workgroup Server resource group), start the uninstaller by selecting Programs > Avid > Avid Interplay Engine > Uninstall Avid Interplay Engine.
5. When you are asked if you want to delete the cluster resources, click No.


Cluster Resource Uninstall
The uninstaller has detected that there are cluster resources associated with the server. Do you want to delete these?
Selecting Yes will move the resources offline and delete the entire Avid Workgroup Server resource group. You should click Yes only when uninstalling from the second node.
Yes
No

6. When you are asked if you want to restart the system, click Yes.
7. At the end of the uninstallation process, if you are asked to restart the system, click Yes.

8. After the uninstallation on the inactive node is complete, wait until the last restart is done. Then open the Failover Cluster Manager on the active node and make sure the inactive node is shown as online.
9. Start the uninstallation on the active node (the node that owns the Avid Workgroup Resource Group).
10. When you are asked if you want to delete the cluster resources, click Yes.

    A confirmation dialog box opens.


Please Confirm
You are about to move offline and delete all cluster resources of the Avid Workgroup Server resource group. Users will no longer be able to connect to the virtual server.
Yes
No

11. Click Yes.
12. When you are asked if you want to restart the system, click Yes.
13. At the end of the uninstallation process, if you are asked to restart the system, click Yes.
14. After the uninstallation is complete, but before you reinstall the Interplay Engine, rename the folder S:\Workgroup_Data (for example, S:\Workgroup_Data_Old) so that it will be preserved during the reinstallation process. In case of a problem with the new installation, you can check the old configuration information in that folder.

If you do not rename the Workgroup_Data, the reinstallation might fail because of old configuration files within the folder. Make sure to rename the folder before you reinstall the Interplay Engine.

4 Automatic Server Failover Tips and Rules

This chapter provides some important tips and rules to use when configuring the automatic server failover.

Don't Access the Interplay Engine Through Individual Nodes

Don't access the Interplay Engine directly through the individual machines (nodes) of the cluster. Use the virtual network name or IP address that has been assigned to the Interplay Engine resource group (see “List of IP Addresses and Network Names” on page 31).

Make Sure to Connect to the Interplay Engine Resource Group

The network names and the virtual IP addresses resolve to the physical machine they are being hosted on. For example, it is possible to mistakenly connect to the Interplay Engine using the network name or IP address of the cluster group (see “List of IP Addresses and Network Names” on page 31). The server is found using the alternative address also, but only while it is online on the same node. Therefore, under no circumstances connect the clients to a network name other than what was used to set up the Interplay Engine resource group.

Do Not Rename Resources

Do not rename resources. The resource plugin, the installer, and the uninstaller all depend on the names of the cluster resources. These are assigned by the installer and even though it is possible to modify them using the cluster administrator, doing so corrupts the installation and is most likely to result in the server not functioning properly.

Do Not Install the Interplay Engine Server on a Shared Disk

The Interplay Engine must be installed on the local disk of the cluster nodes and not on a shared resource. This is because local changes are also necessary on both machines. Also, with independent installations you can later use a rolling upgrade approach, upgrading each node individually without affecting the operation of the cluster. The Microsoft documentation is also strongly against installing on shared disks.

Do Not Change the Interplay Engine Server Execution User

The domain account that was entered when setting up the cluster (the Cluster Service Account —see “Before You Begin the Server Failover Installation” on page 29) also has to be the Server Execution User of the Interplay Engine. Given that you cannot easily change the cluster user, the

Interplay Engine execution user has to stay fixed as well. For more information, see "Troubleshooting the Server Execution User Account" in the *Interplay | Engine and Interplay | Archive Engine Administration Guide*.

Do Not Edit the Registry While the Server is Offline

If you edit the registry while the server is offline, you will lose your changes. This is something that most likely will happen to you since it is very easy to forget the implications of the registry replication. Remember that the registry is restored by the resource monitor before the process is put online, thereby wiping out any changes that you made while the resource (the server) was offline. Only changes that take place while the resource is online are accepted.

Do Not Remove the Dependencies of the Affiliated Services

The TCP-COM Bridge, the Preview Server, and the Server Browser services must be in the same resource group and assigned to depend on the server. Removing these dependencies might speed up some operations but prohibit automatic failure recovery in some scenarios.

Consider Disabling Failover When Experimenting

If you are performing changes that could make the Avid Interplay Engine fail, consider disabling failover. The default behavior is to restart the server twice (threshold = 3) and then initiate the failover, with the entire procedure repeating several times before final failure. This can take quite a while.

Changing the CCS

If you specify the wrong Central Configuration Server (CCS), you can change the setting later on the server machine in the Windows Registry under:

(32-bit OS) HKEY_LOCAL_MACHINE\Software\Avid Technology\Workgroup\DatabaseServer

(64-bit) HKEY_LOCAL_MACHINE\Software\Wow6432Node\Avid Technology\Workgroup\DatabaseServer

The string value CMS specifies the server. Make sure to set the CMS to a valid entry while the Interplay Engine is online, otherwise your changes to the registry won't be effective. After the registry is updated, stop and restart the server using the Cluster Administrator (in the Administration Tools folder in Windows).

Specifying an incorrect CCS can prevent login. See "Troubleshooting Login Problems" in the *Interplay | Engine and Interplay | Archive Engine Administration Guide*.

For more information, see "Understanding the Central Configuration Server" in the *Interplay | Engine and Interplay | Archive Engine Administration Guide*.

A Windows Server Settings Included in Revision 4 and Later Images

The latest images for the AS3000 Windows Server 2008 R2 Standard (starting with Rev. 4, October 17, 2012) include system settings that required manual changes in previous versions of the image. This appendix lists those settings for reference.

- "Creating New GUIDs for the AS3000 Network Adapters" on page 116
- "Removing the Web Server IIS Role" on page 119
- "Removing the Failover Clustering Feature" on page 119
- "Disabling IPv6" on page 122
- "Switching the Server Role to Application Server" on page 123
- "Disabling the Windows Firewall" on page 125

You need to change these settings on each node of the cluster. Changes must be made through an Administrator account.

Creating New GUIDs for the AS3000 Network Adapters

This procedure is not needed with Rev. 4 and later server images.

Because all network adapters in a cluster need to have a globally unique identifier (GUID), you must first delete the installed network adapters and then add them to create new GUIDs.

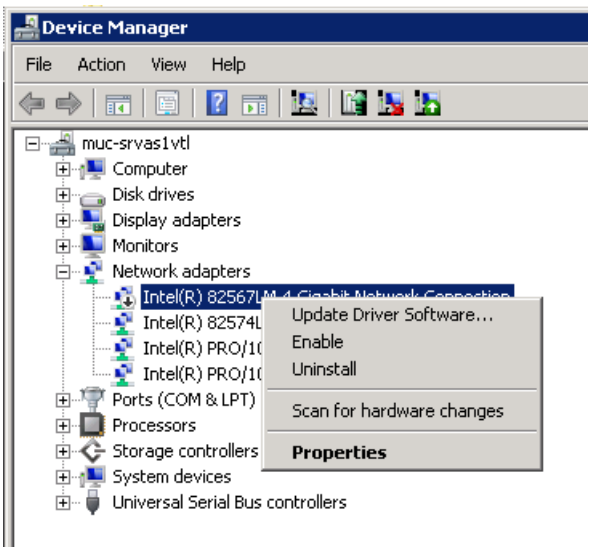
This procedure removes all settings for the network adapters, such as the IP address, name, and bindings.

To create a new GUIDs:

1. Disconnect the ISIS client from the System Director and disconnect the network cables from all network ports at the back of the AS3000.
2. Use the registry editor to delete registry keys, as follows:
   a. Click Start, type `regedit.exe`, and press Enter.
   b. Navigate to the key HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Network
   c. Select the REG_BINARY value “config” and press Delete.
   d. Navigate to the key HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\Tcpip\Parameters
   e. In the subkey “Adapters,” search for the following subkeys, select them, and delete them:

      {00514BC2-D21A-4F92-A04A-AC629A4E021A}
      {21E0E360-9BF6-4840-9ED5-1648E15CA8DC}
      {2EEFFD4F-57E4-47D8-AA1A-E96888272635}
      {5E8B8896-03FA-4E95-9CA4-05A995EF559A}

   f. In the subkey “Interfaces,” search for the same subkeys, select them, and delete them.
3. Click Start, type Device Manager, and press Enter.
4. Expand the Network Adapters category.
5. Right-click on each network adapter and select Uninstall.

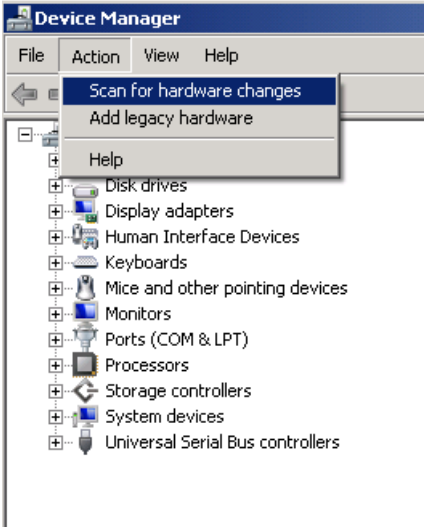


6. In the pop-up dialog box, make sure that “Delete the driver software for this device” is not selected, then click OK.

Confirm Device Uninstall
Intel(R) 82567LM-4 Gigabit Network Connection
Warning: You are about to uninstall this device from your system.
Delete the driver software for this device.
OK
Cancel

After the last adapter is removed, the Network Adapters category disappears.

7. Select Action > Scan for hardware changes



Wait until all four network adapters are repopulated.

8. Reconnect the network cables and reboot the host.

Removing the Web Server IIS Role

This procedure is not needed with Rev. 4 and later server images.

To remove the Web Server IIS role:

1. Click Start > All Programs> Administrative Tools > Server Manager.
2. Click Roles on the left side of the window.
3. Click Remove Roles and click Server Roles.

   The Remove Server Roles dialog box opens.
4. Uncheck Web Server (IIS).

   A dialog box opens and asks if you want to remove the dependent features.
5. Click Remove Dependent Features.
6. Click Next, then click Remove.
7. Follow the system prompts to remove the role. After you click the Close command, the server restarts and displays a confirmation window that reports the successful removal.

Removing the Failover Clustering Feature

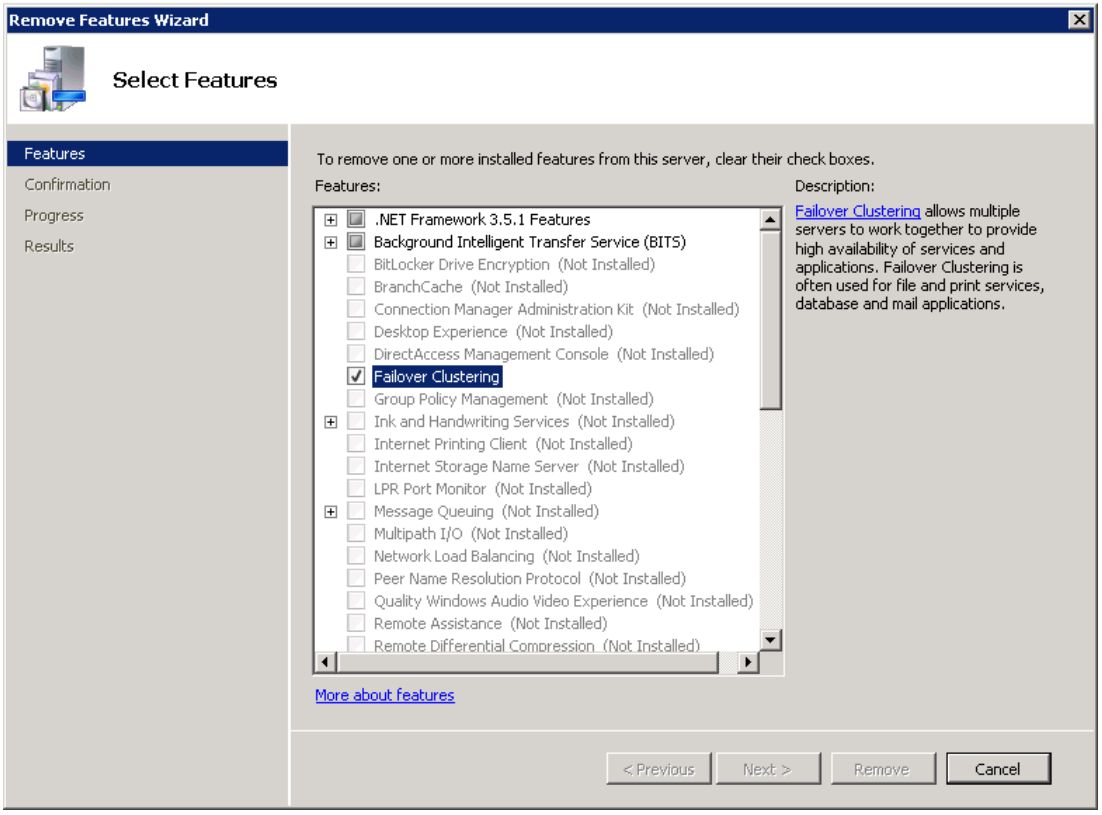
This procedure is not needed with Rev. 4 and later server images.

You need to remove this feature because it includes settings that do not apply to the Interplay Engine failover cluster. You add this feature and configure it later in the cluster creation process.

To remove the Failover Clustering feature:

1. Click Start > All Programs> Administrative Tools > Server Manager.
2. Click Features on the left side of the window.
3. Click Remove Features from the right side of the window.

   The Remove Features Wizard starts and displays the Select Features screen.

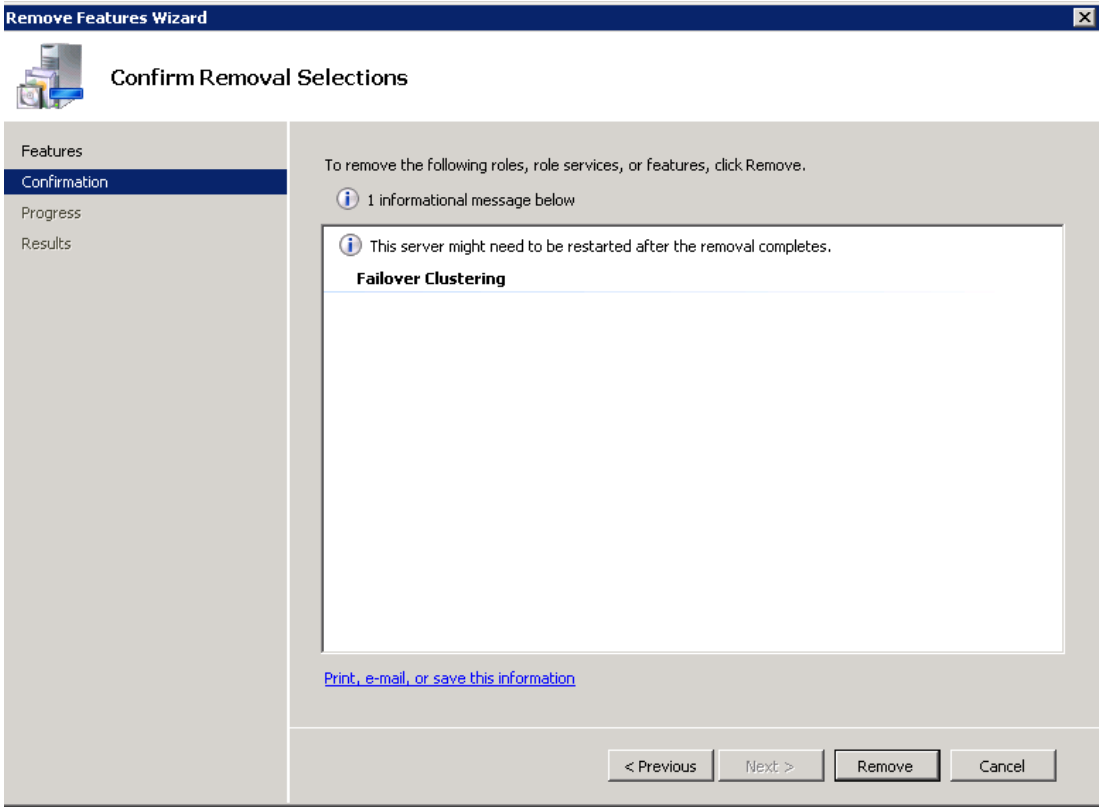

Remove Features Wizard
Select Features
Features
Confirmation
Progress
Results
To remove one or more installed features from this server, clear their check boxes.
Features:
.NET Framework 3.5.1 Features
Background Intelligent Transfer Service (BITS)
BitLocker Drive Encryption (Not Installed)
BranchCache (Not Installed)
Connection Manager Administration Kit (Not Installed)
Desktop Experience (Not Installed)
DirectAccess Management Console (Not Installed)
Failover Clustering
Group Policy Management (Not Installed)
Ink and Handwriting Services (Not Installed)
Internet Printing Client (Not Installed)
Internet Storage Name Server (Not Installed)
LPR Port Monitor (Not Installed)
Message Queuing (Not Installed)
Multipath I/O (Not Installed)
Network Load Balancing (Not Installed)
Peer Name Resolution Protocol (Not Installed)
Quality Windows Audio Video Experience (Not Installed)
Remote Assistance (Not Installed)
Remote Differential Compression (Not Installed)
Description:
Failover Clustering allows multiple servers to work together to provide high availability of services and applications. Failover Clustering is often used for file and print services, database and mail applications.
More about features
< Previous
Next >
Remove
Cancel

4. Clear the check box for Failover Clustering.

   A message asks if you have removed this server from a cluster. Select “Yes.”

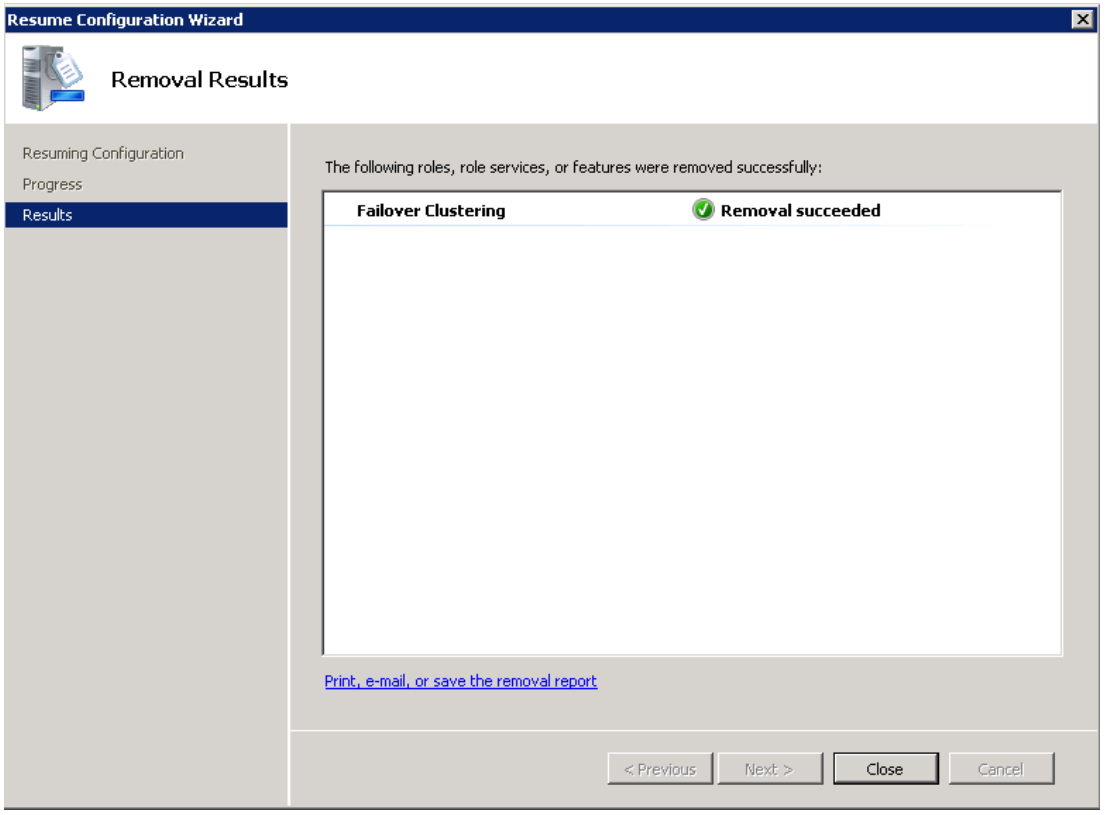
5. In the Select Features screen, click Next.

   The Confirm Removal Selections screen opens.



6. Click Remove.
7. Follow the system prompts to restart the server.

The following illustration shows the Removal Results screen that is displayed after you restart.



Disabling IPv6

Disabling IPv6 completely is no longer recommended. IPv6 is enabled in Rev. 4 and later server images. Binding network interface cards (NICs) to IPv6 is not recommended. See “Configuring the Public Network Adapter on Each Node” on page 47.

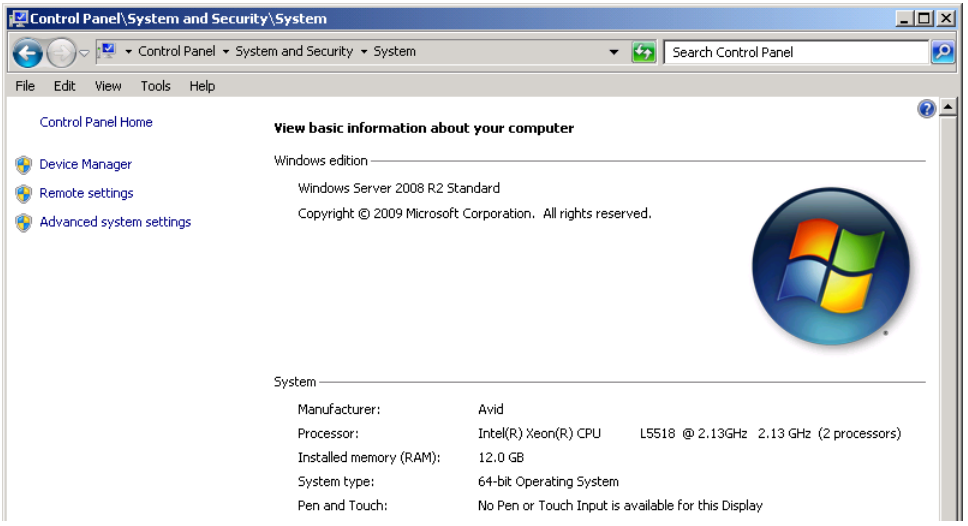
Switching the Server Role to Application Server

This procedure is not needed with Rev. 4 and later server images.

To switch the Server Role to Application Server:

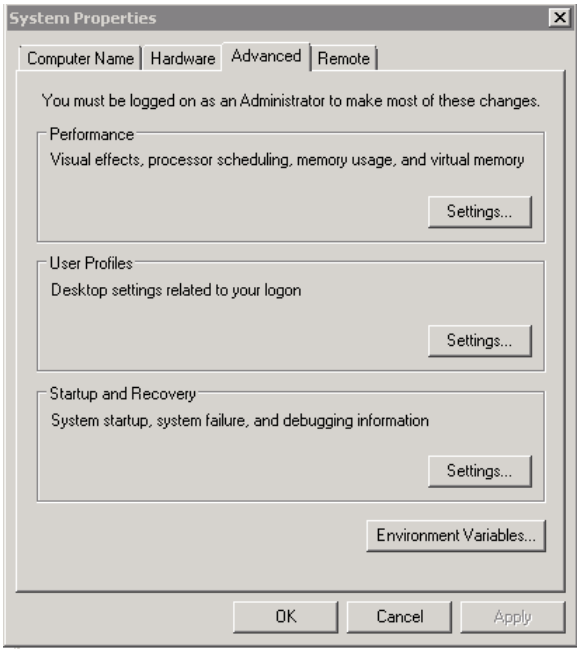
1. Click Control Panel > System and Security > System.

   The System control panel opens.



2. Click “Advanced system settings” on the left of the window.

   The System Properties dialog box opens.

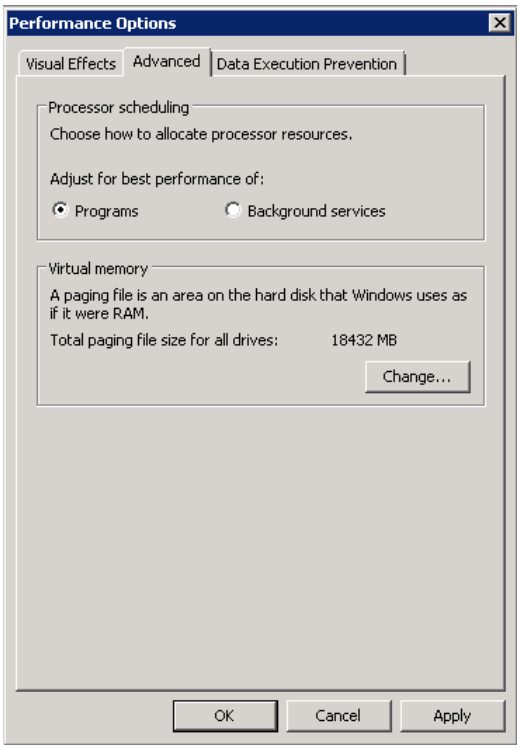


3. Click the Advanced tab and click Settings in the Performance area.

   The Performance Options dialog box opens.

4. Click the Advanced tab.

5. In the Processor scheduling area, under “Adjust for best performance of,” select Programs, as shown in the following illustration.



6. Click Apply, then click OK to close the window.
7. Click OK to close the System properties window, then close the System window.

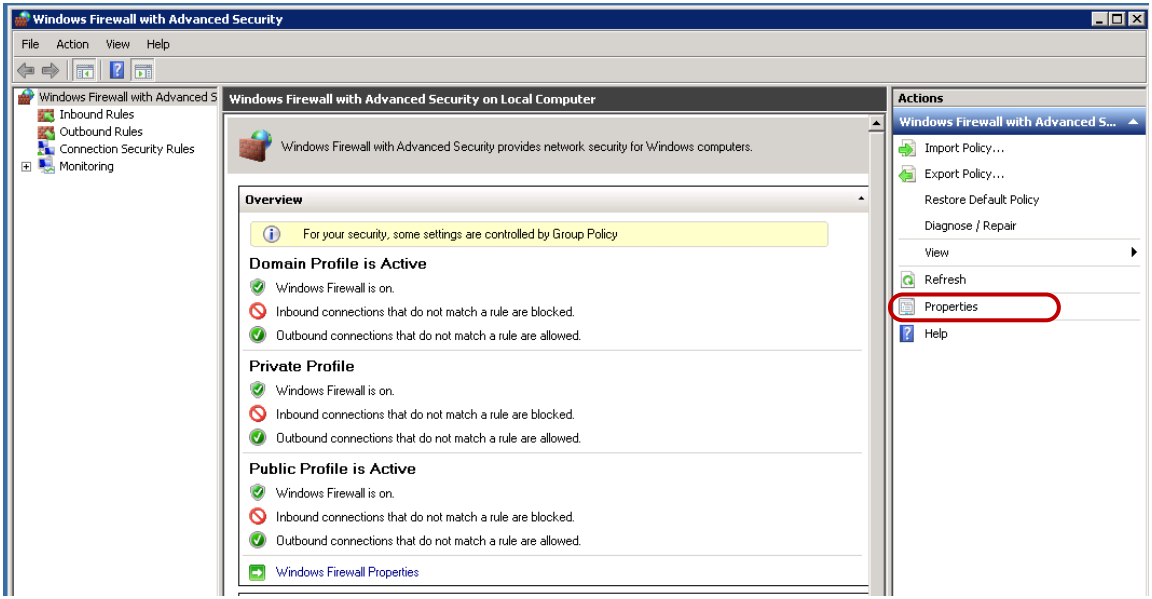
Disabling the Windows Firewall

This procedure is not needed with Rev. 4 and later server images.

Disabling the Windows Firewall is not required for a cluster configuration. Disabling the Windows Firewall is optional, depending on the policies of your site.

To disable the Windows Firewall:

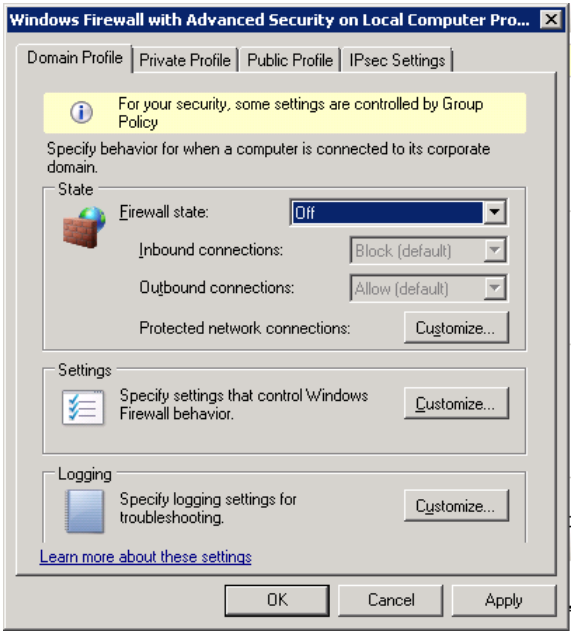
1. Open All Programs > Administrative Tools > Windows Firewall with Advanced Security.
2. In the Actions section on the right, select Properties, as shown in the following illustration.


Windows Firewall with Advanced Security
File
Action
View
Help
Windows Firewall with Advanced S
Inbound Rules
Outbound Rules
Connection Security Rules
Monitoring
Windows Firewall with Advanced Security on Local Computer
Windows Firewall with Advanced Security provides network security for Windows computers.
Overview
For your security, some settings are controlled by Group Policy
Domain Profile is Active
Windows Firewall is on.
Inbound connections that do not match a rule are blocked.
Outbound connections that do not match a rule are allowed.
Private Profile
Windows Firewall is on.
Inbound connections that do not match a rule are blocked.
Outbound connections that do not match a rule are allowed.
Public Profile is Active
Windows Firewall is on.
Inbound connections that do not match a rule are blocked.
Outbound connections that do not match a rule are allowed.
Windows Firewall Properties
Actions
Windows Firewall with Advanced S...
Import Policy...
Export Policy...
Restore Default Policy
Diagnose / Repair
View
Refresh
Properties
Help

3. Set the Firewall state to Off in at least the Domain and the Private Profile tabs.

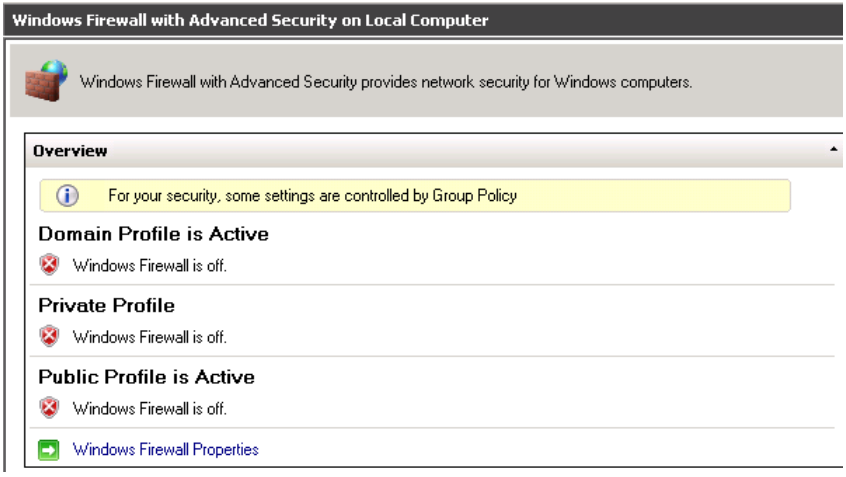
If your site allows it, also set the state to Off in the Public Profile tab.

The following illustration shows the Firewall state tuned off for the Domain Profile.



4. Click OK.

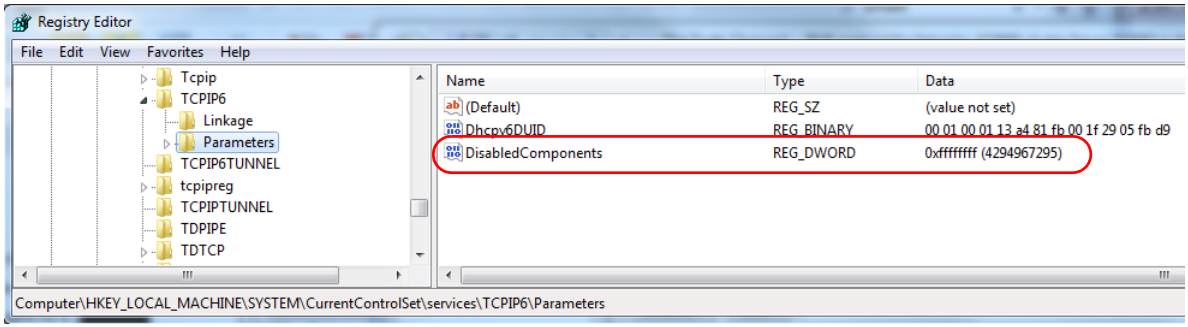
   The Overview section in the center column shows that the firewall is off, as shown in the following illustration.


Windows Firewall with Advanced Security on Local Computer
Windows Firewall with Advanced Security provides network security for Windows computers.
Overview
For your security, some settings are controlled by Group Policy
Domain Profile is Active
Windows Firewall is off.
Private Profile
Windows Firewall is off.
Public Profile is Active
Windows Firewall is off.
Windows Firewall Properties

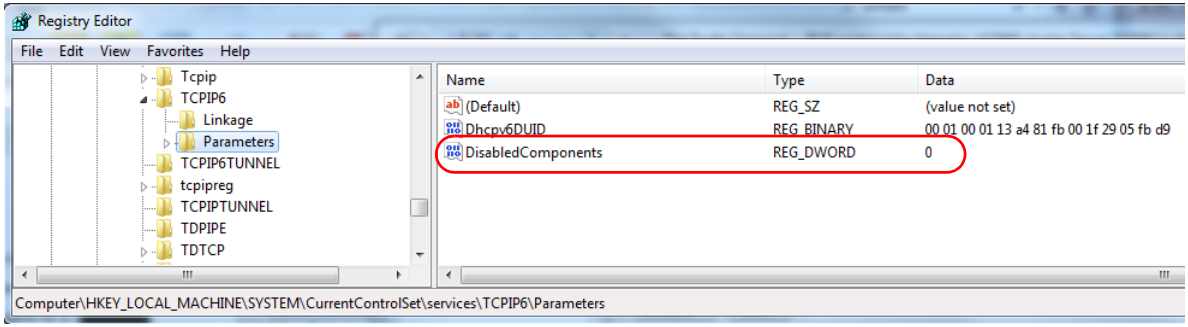
B Enabling TCP/IPv6 in the Registry

Disabling the TCP/IPv6 protocol completely on Interplay Engine servers is no longer recommended. IPv6 is enabled in Rev. 4 and later server images. However, binding network interface cards (NICs) to IPv6 is not recommended. See “Configuring the Public Network Adapter on Each Node” on page 47.

Some installations might have IPv6 disabled through the DisabledComponents registry key. The following illustration shows the registry key set to disabled.



To enable IPv6, set the value of the DisabledComponents key to zero or remove the key from the system. The following illustration shows the key set to zero.



The following procedure describes how to do this through a .reg file.

To enable IPv6:

1. Use a text editor to create a file named SetDisabledComponentsToZero.reg.
2. Enter the following text:

```
REGEDIT4
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\TCPIP6\Parameters
]
"DisabledComponents"=dword:0
```

3. Save the file.
4. Right-click the file name and select Merge.

   The key is set to zero.

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Avid
75 Network Drive
Burlington, MA 01803-2756 USA

Technical Support (USA)
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